APPENDIX A:
PANEL MEMBERS

COSTIS TOREGAS (CHAIR), President, Public Technology, Inc. Former Vice President and Program Director, Public Technology, Inc.; Consultant, Doxiadis Systems Development Corporation.

G. EDWARD DESEVE, Managing Partner, American Government Management. Former Partner and National Industry Director, Federal Government, for the Health Care & Public Sector Practice, KPMG; Acting Deputy Director for Management, and Controller, Office of Federal Financial Management, Office of Management and Budget; Chief Financial Officer, U.S. Department of Housing and Urban Development; Special Assistant to the Governor, Commonwealth of Pennsylvania; President, American Capital Group; Managing Director, Merrill Lynch Capital Markets, New York. Former positions with the City of Philadelphia, Pennsylvania: Analyst and Deputy Director, Community Renewal Program; Assistant to the Director of Finance; Deputy Director of Finance for Budget; Director of Finance.

MARTIN FAGA, President and Chief Executive Officer, The MITRE Corporation. Former positions with The MITRE Corporation: Executive Vice President and Director, Department of Defense Federally Funded Research and Development Center; Senior Vice President and General Manager, Center for Integrated Intelligence Systems; Member, Technical Staff. Former Assistant Secretary of the Air Force for Space; Director, National Reconnaissance Office, U.S. Air Force; Professional Staff Member, House Permanent Select Committee on Intelligence.

ROSSLYN S. KLEEMAN, Distinguished Executive-in-Residence, Department of Public Administration, School of Business and Public Management, George Washington University. Former Staff, Office of Presidential Personnel, The White House; Director, Federal Workforce Future Issues and Senior Associate Director, General Government Division, U.S. General Accounting Office; Project Director, U.S. Office of Management and Budget, President's Advisory Council on Management Improvement; Acting Director and Deputy Director, Women's Action Program, U.S. Department of Health, Education, and Welfare.

SINGLETON BERYL MCALLISTER, Partner, Patton Boggs, LLP; Former General Counsel, U.S. Agency for International Development. Former Counsel, Shaw, Pittman, Potts & Trowbridge; Partner, Reed Smith Shaw & McClay; Senior Counsel, Committee on the Budget, U.S. House of Representatives; Judicial Law Clerk to Jack E. Tanner, U.S. District Court for the Western District of Washington; Special Assistant to Congressman Mickey Leland; Legislative Director to Congressman William H. Grey, III; Assistant Director, TransAfrica, Inc.; Legislative Assistant to Congressman Parren Mitchell.

FRANKLIN S. REEDER, President, The Reeder Group. Former Director, Office of Administration, The White House. Former positions with the U.S. Office of Management and Budget: Deputy Associate Director for Veterans Affairs and Personnel; Assistant Director for General Management and Deputy Assistant Director; Chief, Information Policy Branch and Deputy Chief; Policy Analyst; Chief, Systems Development Branch. Former Deputy Director, House Information Systems and member of the Committee Staff, Committee on House Administration, U.S. House of Representatives. Former positions with the U.S. Department of the Treasury and the U.S. Department of Defense focusing on information technology and systems.

BERNARD ROSTKER, Senior Fellow, RAND. Former Under Secretary of Defense (Personnel and Readiness), and Special Assistant to the Secretary of Defense for Gulf War Illnesses, Medical Readiness, and Military Deployment, U.S. Department of Defense. Former Under Secretary of the Army, Department of the Army. Former positions with the Department of the Navy: Assistant Secretary for Manpower and Reserve Affairs; Principal Deputy Assistant Secretary of the Navy for Manpower and Reserve Affairs; Former Director of the Selective Service System. Former positions with RAND Corporation: Director of the Defense Manpower Research Center of the National Defense Research Institute; Program Director of the Force Development and Employment Program and Associate Director of the Arroyo Center; Program Director of the Project Air Force Manpower, Personnel and Training Program.

GORDON SHERMAN, Director, Fidelity National Bank. Former positions with the Social Security Administration, Atlanta Region: Regional Commissioner; Deputy Regional Commissioner, Principal Staff Officer, Office of Atlanta Regional Commissioner; Administrative and Staff Assistant. Various directorships on several bank boards and both profit and non-profit organizations as well as civic associations.

APPENDIX B:
PROJECT LEADERSHIP COMMITTEE MEMBERS

CO-CHAIRS:

Gloria Parker, CIO, HUD
Ira Hobbs, Acting CIO, Agriculture

PUBLIC MEMBERS: Executive Branch

Army	**Miriam Browning** Director, Army Information Management Directorate
HHS	**Evelyn White** Deputy Assistant Secretary for Human Resources
State	**Fernando Burbano** Chief Information Officer **Patricia A. Popovich** Deputy Chief Information Officer for Management and Customer Service
Treasury	**Kay Frances Dolan** Deputy Assistant Secretary for Human Resources **Fred Thompson** Assistant Director, Customer Service Consulting Office of the Chief Information Officer
VA	**Robert Bubniak** Acting Secretary for Information and Technology

PUBLIC MEMBERS: Judicial Branch

Administrative Office of the U.S. Courts	**Charlotte G. Peddicord** Chief, Human Resources Division
U.S. Courts	**Tony Anastas** Clerk of Court District Court Boston, MA

PRIVATE-SECTOR MEMBERS:

AFCEA	**Jean Callahan** Director of Human Resources BoozAllen&Hamilton
ITAA	**Anne Altman** Managing Director IBM Federal
SRA	**Renato (Renny) DiPentima** President, Consulting and Systems Integration SRA Internatioal

APPENDIX C:
PROJECT METHODOLOGY

At the outset of this study, the Academy formed two groups to provide expert guidance and oversight.

The project panel consists of nine Academy Fellows who are knowledgeable in the issues and problems associated with attracting and retaining well-qualified IT personnel to carry out the work of the federal government. The group includes individuals from the private and public sectors (see ***Appendix A*** for list of panel members). The panel met frequently with the Academy project team to participate in all phases of the project and to exercise its oversight role.

The Project Leadership Committee was formed to provide the project team with insight and reaction to the research findings and the compensation system design alternatives, as well as to serve as a feedback mechanism to the respective organizations on the progress of the study. The Committee is led by the two co-chairs of the CIO Council's IT Workforce Committee and is comprised of federal public- and private-sector individuals with IT, human resources, financial and line management experience, whose knowledge and experience in the recruitment and retention of IT talent will be helpful in shaping solutions (see ***Appendix B*** for list of Project Leadership Committee members).

The specific study tasks include research (Phase I) and design of alternative compensation models and other human resources systems (Phase II).

RESEARCH PHASE METHODOLOGY

The research phase of this study was carried out using the following methodology:

- **Project Team Subgroups:** The Academy Project Team broke into five separate subgroups for purposes of collecting data and conducting research: 1) Federal Government; 2) non-Federal Public Sector - State and Local Governments, International Governments, Non-Profit Institutions; 3) Private Industry and Academia; 4) Compensation/Salary Surveys; and, 5) Legislative and Regulatory Review.

- **Research Questions:** General questions were outlined for the first contact with compensation or human resources managers for public- and private-sector organizations. After using this set for the initial

discussions, the project team determined which organizations warranted follow-up contacts and designed more specific research questions for both the compensation managers and the chief IT managers (see **Appendix D** for these research questions).

- **Interviews:** Extensive individual and group interviews were conducted via telephone or in-person with compensation managers, human resources directors, IT chiefs and other appropriate persons from federal agencies, state and local governments, international governments, non-profit institutions, professional societies/associations, private industry, colleges and universities.

- **Literature Search:** An extensive literature search was made on the Internet and from books, reports, and other documents from academia, professional societies/associations and other identified sources. All articles, reports and materials were carefully read and summarized by project team members who, in turn, shared the summaries with other team members. The listing of results of this exhaustive literature review is found in the Bibliography, **Appendix E.**

- **Benchmarking Best Practices:** Benchmarking studies focusing on the recruitment and retention of IT workers, particularly in non-federal organizations, were collected, analyzed and shared with team members, the panel and the Project Leadership Committee. Additional information on best practices was obtained during the literature search, interviews and from other sources; these best practices were further studied by the project team for potential application in the design phase. **Appendix F** presents charts of the results of the benchmarking and best practices' analyses for the various private sector companies and governmental entities.

- **Workforce Trends:** Information on the demographics of the federal IT workforce as well as IT and general occupational trend data were gathered from a number of sources. They include:
    - U.S. Office of Personnel Management
    - Bureau of Labor Statistics, U.S. Department of Labor
    - Information Technology Association of America
    - Bureau of the Census, U.S. Department of Commerce
    - The Council of State Governments
    - National Association of State Information Resources Executives
    - National Association of State Personnel Executives
    - Society for Human Resources Management;
    - International Personnel Management Association
    - WorldatWork (formerly, American Compensation Association)

- **Other External Sources:** Other external sources of research data and relevant information were identified and contacted. The U.S. General Accounting Office recently completed an executive guide, Maximizing the Success of Chief Information Officers, which covers human capital issues for public- and private-sector CIO's. The project team met on-site with GAO officials to discuss their interview notes and findings. The organizations listed above under Workforce Trends provided not only demographics and workforce trend data but also publications recently issued on the IT workforce. Other studies including the review of compensation and pay for the Administrative Offices of the U.S. Courts, Computerworld's 2000 Salary Survey, and the Council of State Governments' report on Hiring and Keeping IT Employees in State Government were reviewed and analyzed In addition, numerous sources of expert information on current human resources issues in both public and private sectors shared their knowledge of the trends in employment of the IT workforce.

- **Legislative and Regulatory Review:** The project team identified and reviewed relevant laws, regulations, policies, and procedures to confirm what flexibilities and constraints currently exist. Particular attention was focused on the FEPCA and the occupational pay system components of that law since this is the existing legislation that may provide the needed flexibility to structure a new approach to IT pay.

- **Compensation/Salary Surveys:** The project team researched the various types of survey instruments and groups conducting the surveys to assess the validity, quality, and appropriateness of all types. Included in this review is an evaluation of the current BLS approach to data collection and reporting used for GS occupations.

Alternative Compensation Models Phase

The second phase of the project used the following methodology:

- **Project Team Subgroup:** A subgroup of the project team analyzed the research findings and other appropriate compensation data. Based on their analysis, three different compensation models were developed to serve as the basis for discussion and refinement of alternatives.

- **Focus Groups:** Seven separate focus groups, totaling 88 participants, met on-site at the Center for Human Resources Management to discuss the future of IT and the alternative compensation models and related human resources issues. The participants were grouped as follows: HR Specialist; Financial/Budget Specialist; IT Program Management; IT Specialist; IT Manager; Senior IT Professional; and, Junior IT Professional. Participants represented a cross-section of large and small departments/agencies as well as the judiciary.

- **Colloquium:** A distinguished group of experts from the private and public sectors were gathered to discuss the future of IT, its impact on organizations, and its impact on HRM policies and practices. This group was also asked to review the alternative compensation models and to make recommendations on improvements and changes to the models.

APPENDIX D:
LITERATURE REVIEW

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APPENDIX E:
Legal and Regulatory Review of Pay Authorities Relating to Information Technology

This document reviews relevant statutory and regulatory areas relating to pay authorities that might apply to IT, with a view towards the implications of the recommendations in this study. The study identifies two compensation models, Model One: Modified General Schedule and Model Two: Market-Based System, that would enable the government to compete for IT talent.

No specific statutory or regulatory impediments to implementing the recommendations were found. However, some statutory and regulatory considerations affecting the recommended approaches will be addressed where appropriate.

The following statutory and regulatory sources and human resource flexibilities were reviewed:

Federal Employees Pay Comparability Act (FEPCA) of 1990, P.L. 101-509

The FEPCA provides rules for pay in the federal government. The act covers areas such as basic pay, adjustments to statutory pay rates, locality-based pay, comparability pay, pay authority for critical positions, differentials, and special pay rates. It also covers awards, allowances/bonuses, and special rates for law enforcement officers, administrative law judges, and members of the Contract Appeals Board; reemployment of retirees; and other compensation matters. The act provides broad coverage on pay issues, but also contains certain limitations on amounts, time and circumstances in which payments can be made depending upon the category of pay involved.

This statute is significant in regard to this study's recommendations because it provides legal authority for some of the key areas addressed in the two models. An analysis of some of the areas as they apply to the two models is appropriate. Model One: Modified General Schedule maintains the current GS grades and pay levels and makes a few changes. It eliminates steps within grades, allows for starting pay and noncompetitive promotions to be based on performance and acquisition of new and/or higher level competencies, combines two or more grades into one grade, and calls for a federal-wide competency framework. This model maintains elements of the

current GS system and allows for locality pay, special pay rates, bonuses, and awards. Title I, Section 101 of the FEPCA allows for automatic across-the-board cost of living adjustments (COLAs) and for locality-based comparability pay for certain geographical areas.

The act allows for within-grade (step) increases and noncompetitive promotions based on performance and time-in-grade. These tend to be automatic increases, as long as performance is fully successful or satisfactory. FEPCA would limit Model One since Model One would eliminate steps within grades and step increases and would base increases to pay on performance and/or acquisition of new or higher-level competencies. Similarly, FEPCA would pose some limitations in combining grades and creating pay ranges in Model One. In Title I, FEPCA also provides for special pay rates, which would support a similar aspect of Model One.

Other areas of consideration are the bonuses and competency framework in Model One. In Title II, FEPCA provides for recruitment, relocation, and retention bonuses. Since Model One contains these features, it would be consistent with FEPCA in these areas. FEPCA, however, limits these to 25 percent of base pay. The federal-wide competency framework under Model One could pose a different structure in identification and performance measurement of IT positions, since it could conflict with the current classification system which supports FEPCA.

Model Two: Market-Based System provides a broad, flexible pay system which makes major changes to the current system and places strong emphasis on performance and competencies in a market-focused environment. Its features are: five levels or grades with a broad pay range associated with each level; pay ranges linked to pay for comparable positions in the market; no across-the-board increases; pay increases and promotions based on acquisition of new and/or higher competencies and performance results; appointment in the excepted service; IT specialties linked to the five levels; generic description of duties, eliminating the current classification system; salaries commensurate with market-based experiences and competencies; a federal-wide competency framework; and a variety of bonuses. This model is designed to afford flexibility in attracting and retaining IT professionals and strengthen managerial responsibility for salary budgets.

The limitations of FEPCA become more apparent when applied to this market-based approach to managing IT pay comparability. Increases in pay under FEPCA, such as the annual COLAs, automatic locality pay to all affected employees in a geographical area, step increases and noncompetitive promotions would limit Model Two. This model provides for an annual salary survey as the basis for adjusting pay levels and ensuring market alignment. It would eliminate the COLAs and step increases covered under FEPCA. Noncompetitive promotions, as in Model One, would be based on new and/or higher competencies and performance results. Salary

schedules for different geographic areas would be based on the market. Availability and use of a variety of bonus options would be consistent with FEPCA. However, this market-based system would be hampered by FEPCA in the limitation on 25 percent of base pay for the bonuses. Under Model Two, managers would need considerable flexibility and authority to set starting pay and determine amounts of bonuses. FEPCA, with its base pay cap, could limit their authority to set, manage and balance their responsibility for salary budget and limit their ability to manage the resources needed to support recruitment, hiring and retention.

Information Technology Management Reform Act (ITMRA) of 1996 (Also Known As The Clinger-Cohen Act of 1996)

The Clinger-Cohen Act provides for the acquisition, use, and disposal of IT in federal programs to improve productivity, efficiency and effectiveness of federal programs. Its goal is to reform acquisition laws and IT management in the federal government. It requires agency heads to establish procedures to select, manage, and control their IT programs and investments. It addresses information resources management (IRM) and highlights the need for well-developed and well-trained information resources managers.

Division E, Section 5124(c)(3) addressees the information resources management (IRM) skills portion of the Act. It requires the CIO of an agency to perform IRM duties and to:

"(3) annually, as part of the strategic planning and performance evaluation process required...

(a) assess the requirements established for personnel regarding knowledge and skill in information resources management and the adequacy of such requirements for facilitating the achievement of the performance goals established for information resources management;

(b) assess the extent to which positions and personnel at the executive level of the agency and the positions and personnel at the management level of the agency below the executive level meet those requirements;

(c) in order to rectify and deficiency in meeting those requirements, develop strategies and specific plans for hiring, training and professional development; and

(d) report to the head of the agency on the progress made in improving information resources management capability."

The act also requires that CIOs provide advice and assistance to senior managers to ensure that IT is acquired and managed efficiently and consistent with the Paperwork Reduction Act; develop and maintain implementation of a sound integrated IT architecture; and monitor performance of IT programs/projects and evaluate them with appropriate performance measures. These requirements are designed to ensure that agencies have processes in place for effective implementation of IT programs. The models recommended in this study are supported by this act, particularly in their focus on competencies, performance management, results, and training of IT professionals. The development and use of the federal-wide IT competency framework in the models is very consistent with this act.

EXECUTIVE ORDER 13111 OF JANUARY 12, 1999, USING TECHNOLOGY TO IMPROVE TRAINING OPPORTUNITIES FOR FEDERAL GOVERNMENT EMPLOYEES, 64 F.R. 2793 (1/15/99)

This Executive Order established the President's Task Force on Federal Training Technology, consisting of several agency or department heads, to provide leadership regarding the effective use of technology to improve training opportunities for federal employees. The goals of the act are to enhance employees' training opportunities using training technology and finance this training and post-secondary education. The act also provides for partnerships among federal agencies and other appropriate entities to promote sharing and use of training opportunities and technology.

WORKFORCE INVESTMENTS ACT OF 1998, P.L. 105-220, AUGUST 7, 1998

The purpose of this act is to consolidate, coordinate, and improve employment, training, literacy, and vocational rehabilitation programs. It provides for coordination between federal, state, and local entities on workforce investment systems and activities. It has linkages with other programs such as veterans' employment, individuals with disabilities and the older Americans Act programs. The act mandated the establishment of the Twenty-First Century Commission to address the role of IT in relation to the continued prosperity of the U.S. economy.

THE GOVERNMENT PERFORMANCE AND RESULTS ACT (GPRA) OF 1993, P.L. 103-62 [S.20], AUGUST 3, 1993.

The GPRA was enacted for the following purposes:

(1) to improve public confidence in the capability of the federal government; (2) to establish program performance reform, setting, measuring and reporting on program goals; (3) to improve federal program effectiveness and accountability by focusing on results; (4) to improve service delivery; (5) to improve congressional decision-making; and (6) to

improve internal management of the federal government. All of these factors have a bearing on the development and management of a sound IT pay system in the federal government, particularly in view of the act's emphasis on strategic planning. This reinforces the need for the HRM aspect of IT to be aligned with agency mission in strategic planning.

Title 5 Authorities and Flexibilities

The following are Title 5 authorities and flexibilities currently available for use in addressing recruitment, hiring, and retention of IT professionals. They are supported by FEPCA and might be used with each recommended model of this IT pay study in accordance with OPM guidelines.

5 CFR 213, Subpart A, Excepted Service Appointments

Excepted Service appointments may be made using special authorities such as Schedules A, B, and C. Schedule A appointments are authorized by the Office of Personnel Management for positions other than those of a confidential or policy- determining character when it is not practical to examine using standards and requirements established for the competitive service. Examples are attorneys, law clerk trainees, PMI's, and people with disabilities. Schedule A appointments cannot be made to positions in the SES. Schedule B appointments are authorized for positions other than those of a confidential or policy-determining character when it is not practical to hold a competitive examination. An example is an appointment in the Student Educational Employment Program. Schedule C appointments are authorized for positions which are of a confidential or policy-determining nature. An example is an appointment involving a close and confidential working relationship with an agency head.

Section 213.104 provides for temporary intermittent or seasonal appointments in Schedules A, B, and C. Temporary appointments may not exceed one year, unless the applicable schedule provides otherwise. Agencies may extend the temporary appointment for more than one year. OPM may approve extension of specific temporary appointments beyond two years due to major reorganizations, base closings or other rare and unusual circumstances.

5 CFR 213.3102 (R), Internship or Fellowship Programs in the Excepted Service

This section allows for Schedule A appointments to be made in support of programs involving (1) internships or fellowships that provide developmental or professional experience to individuals who have completed their formal education; (2) training and associateships designed to increase the pool of candidates in a particular occupational specialty; or (3) professional industry exchange programs that provide cross-fertilization between the agency and the private sector; etc. Appointments may not exceed four years.

Civil Service Due Process Amendments, P.L. 101-376, August 17, 1990

Section 2, paragraph 7511(a)(c)(iii) of this Act provides excepted service appeal rights for individuals, other than preference eligibles, in the excepted service to the Merit Systems Protection Board (MSPB). Such individuals are employees who have completed two years of current continuous service in the same or similar positions in an Executive agency under other than a temporary appointment limited to two years or less. Paragraph 7511(b)(3) provides that an employee in the excepted service and covered by Subchapter II of Chapter 75 who has been reduced in grade or removed under this section is entitled to appeal to the MSPB.

These excepted service provisions provide another avenue for appointing employees in the federal government. Excepted Service appointments with not-to-exceed dates can be used in the IT areas under the two models. However, the appeal rights given in the act place some limitations on the application of the private sector's "employment-at-will" doctrine to excepted service appointments in the federal government.

5 CFR 213.3202, Student Educational Employment Program—Student Temporary Employment Program (STEP) and Student Career Experience Program (SCEP)

This regulation provides authority to appoint graduate and undergraduate students in the excepted service under the two components (STEP) and (SCEP). Agencies can appoint students who are enrolled in or have been accepted for enrollment in at least a part-time schedule at an accredited institution. STEP appointments cannot exceed one year and cannot be converted to permanent. SCEP appointments may be noncompetitively converted to career/career-conditional appointments within 120 days of completing academic requirements.

5 CFR 304, Expert and Consultant Appointments

This regulation provides for employment of experts or consultants on a temporary or intermittent basis. The appointment is in the excepted service under 5 U.S.C. 3109 to perform work that does not exceed one year or is intermittent.

5 CFR 316, Subpart C, Term Employment

This regulation provides for the use of term appointments for one to four years when the need for an employee's services is not permanent. Reasons for making the appointment include project work, extraordinary workload, reorganization, and contracting out of the function. Any of these resource issues could affect the need for IT professionals.

5 CFR 316, Subpart D, Temporary Limited Employment

This regulation provides for the use of temporary appointments for short term needs that are not expected to last longer than one year, of Veteran Readjustment Appointments that are used to appoint veterans in the

excepted service, and of streamlined student employment programs for meeting future workforce needs.

5 CFR 530, Subpart C, Special Salary Rate Schedules for Recruitment and Retention

OPM may establish higher special salary rates for an occupation or group of occupations locally or nationwide when it determines that it is necessary to overcome existing or likely significant handicaps in the recruitment or retention of well-qualified personnel.

5 CFR 531.203 (b), Superior Qualification Appointments

This provision allows for appointments above the minimum rate because of the superior qualifications of the candidate or a special need of the agency for the candidate's services.

5 CFR 553, Subpart B, Reemployment of Civilian and Military Retirees

Dual compensation laws prohibit reemployed civilian and military retirees from receiving the full combined value of their salaries and annuities. This provision allows OPM to waive the dual compensation prohibition on a case-by-case basis when an agency has difficulty recruiting or retaining a candidate.

5 CFR 572, Travel and Transportation Expenses for Interviews and New Appointments

An agency may pay travel and transportation expenses for a pre-employment interview or for a new appointee to first duty post.

5 CFR 575, Subpart A, Recruitment Bonuses

An agency may pay a lump-sum recruitment bonus of up to 25 percent of an employee's annual rate of basic pay. The employee must sign a written service agreement to complete a specified period of employment with the agency.

5 CFR 575, Subpart B, Relocation Bonuses

An agency may pay lump-sum relocation allowances of up to 25 percent of an employee's annual basic rate of pay for an employee who must relocate to fill a position that otherwise would be difficult to fill.

5 CFR 575, Subpart C, Retention Bonuses

An agency may pay biweekly payments of up to 25 percent of a current employee's annual basic rate of pay to an individual or up to 10 percent of basic pay to a current group of employees if the unusually high or unique qualifications of the employees or a special need of the agency for the employees' services makes it essential to retain the employees, and the agency determines that the employees would be likely to leave in the absence of the retention allowance.

5 CFR 595, Physicians Comparability Allowances

Section 595.101 authorizes the payment of allowances to certain eligible federal physicians who enter a service agreement with their agencies. The allowances are paid in cases where the agency is experiencing recruitment and retention problems. Section 595.104 provides that a significant recruitment problem exists when there is an unacceptably high turnover rate; the qualification requirements being used to consider candidates for vacant positions are less than the qualifications actually needed to perform the work; the agency has made efforts to recruit qualified candidates for the vacant positions and to retain physicians presently employed in the category needed; and a significant number of qualified candidates is not available to fill the vacancies in the category at the rate of pay the agency may offer if no comparability allowance is paid. This provision helps meet the special needs of the VA to attract qualified employees with professional and technical expertise needed by the agency to carry out its mission.

EXAMPLES OF NON-TITLE 5 AUTHORITIES AND FLEXIBILITIES

The following are examples of non-Title 5 authorities and flexibilities used in other occupations in various agencies to address pay, recruitment, hiring and retention issues. Other occupational categories such as judicial, law enforcement, and research also have pay authorities and flexibilities broader than Title 5.

The acts and regulations that follow represent some of the occupations which require and use special pay systems in the federal government. They lend support to the efforts involving the IT profession.

Title 38, Veterans Benefits

OPM may delegate use of VA personnel authorities under Title 38 of the U.S. Code to help recruit and retain physicians. Under these authorities, agencies may use special salary rates, premium pay, qualifications-based grading system, and physician special pay authorities.

Financial Insitutions Reform, Recovery, and Enforcement Act (FIRREA) of 1989, P. L. 101-73, August 9, 1989

This Act provides for the abolishment of the Federal Savings and Loan Insurance Corporation and the Federal Home Loan Bank Board and the transfer of functions, personnel and property to other financial institutions such as the Federal Deposit Insurance Corporation, the Office of Thrift Supervision or the Federal Housing Finance Board. The key provision which supports this IT pay study is Section 1206, Comparability Compensation Schedules. This section allows affected financial institutions to establish and adjust compensation and benefits outside of Title 5.

Section 1206 provides:

> "The Federal Deposit Insurance Corporation, the Comptroller of the Currency, the National Credit Union Administration Board, the Federal Housing Finance Board, the Oversight Board of the Resolution Trust Corporation, the Farm Credit Administration, and the Office of Thrift Supervision, in establishing and adjusting schedules of compensation and benefits which are to be determined solely by each agency under applicable provisions of law, shall inform the heads of the other agencies and the Congress of such compensation and benefits and shall seek to maintain comparability regarding compensation and benefits."

This section of the Act allows these financial institutions to set pay and benefits under separate laws pertaining to each agency. This delegation of authority to agencies is a significant aspect of the Act. Each of these agencies determines the scope and parameters of pay and benefits consistent with FIRREA. This section of FIRREA gives broad flexibility to these financial institution to establish and manage pay and benefits and ensure comparability across the agencies. This is more representative of the market-based approach to pay envisioned in Models One and Two of the IT pay study. Each of these agencies must factor in market-based considerations across agency lines and externally to maintain comparability of pay and benefits. It appears that FIRREA allows greater flexibility than FEPCA in determining, solely by each agency, the types of compensation schedules and benefits and in setting pay beyond the traditional GS.

Department of Transportation and Related Appropriations Act of 1996, P. L. 104-50, November 15, 1996

During the early 1990's, the Federal Aviation Administration (FAA) undertook personnel reform. Several national studies indicated that the FAA mission requirements, workforce characteristics, and customer expectations demanded a flexible personnel system unique to the agency. The FAA historically functioned under Title 5 like most federal agencies. This Act gave the FAA personnel management flexibility and exempted it from most of the provisions of Title 5. The FAA has the authority to develop personnel systems tailored to its unique needs and culture. One of the basic tenets of the FAA personnel system is its emphasis on intellectual capital to increase employee satisfaction and organizational performance and support agency and line of business strategic plans. This same principle should apply to the IT profession.

Other Relevant Sources Reviewed

Civil Rights Act of 1964, Title Vii, P. L. 88-352, July 2, 1964 and Other Laws Relating to Diversity

This Act prohibits discrimination in employment on the basis of race, color, sex (including sexual harassment), religion or national origin. Both this act

and the 1991 Civil Rights Act are relevant to the IT study because they provide statutory consideration of these categories, which will also apply to any pay system developed for the IT profession. This is similarly true of laws governing Americans with Disabilities, Age Discrimination, Equal Pay and Equal Employment Opportunity regulations.

OMB, Circular No. A-130. Management of Federal Information Resources

This circular provides uniform government-wide information resources management policies as required by the Paperwork Reduction Act of 1980, as amended by the Paperwork Reduction Act of 1995, P.L. 104-13, 44 U. S. C. Chapter 35.

OPM, Human Resource Flexibilities and Authorities In The Federal Government, http://www.opm.gov

OPM, Recruiting and Retaining IT Professionals, http://www.opm.gov

OPM, Presidential Management Intern Program, established by Executive Order in 1977, expanded to include the IT profession

Presidential Task Force on Federal Training Technology, Report to the President on Technology: Transforming Federal Training, July, 2000

APPENDIX F:
TITLE 5 EXEMPT AGENCIES

The following agencies/organizations are exempt in whole or in part from Title 5:

- Tennessee Valley Authority
- United States Postal Service
- Federal Aviation Administration
- Metropolitan Washington Airport Authority
- Smithsonian Institution — Trust Employees
- Botanical Garden
- Federal Reserve Board
- Federal Deposit Insurance Corporation
- Office of Thrift Supervision
- Office of Comptroller of the Currency
- Sallie Mae
- Office of Federal Housing Enterprise
- Library of Congress
- General Accounting Office
- Government Printing Office
- Office of the Architect of the Capital
- The Peace Corps
- Foreign Agricultural Service
- Department of State—Foreign Service
- Veterans Health Administration
- Atomic Energy Commission
- Nuclear Regulatory Commission
- National Security Agency
- Central Intelligence Agency
- Defense Intelligence Agency
- National Imagery and Mapping Agency
- Defense Exchange System
- Virgin Islands Corporation

APPENDIX G:
INTERVIEW QUESTIONS

PART I. Background on the Company

1. What types of information technology occupations exist in your organization (i.e., mission-focused or support; professional or administrative)?

2. What are your major HR concerns for your IT occupations/employees?

PART II. Pay and Rewards for IT Occupations/Employees

1. What are the basic principles/goals driving your compensation system for IT occupations?

2. How do you set starting pay for employees in IT occupations? Who has the authority to set starting pay?

3. Do you use bonuses, awards, premiums, or other approaches to supplement pay for IT employees? If so, what kinds, how do you determine who qualifies, how does the bonus work, and who has authority to award?
   - signing/hiring bonus
   - retention bonus
   - referral bonus
   - on-the-spot awards
   - hot skills or tech pay premiums
   - paid overtime
   - team bonuses
   - variable pay
   - stock options

4. Does your reward system for IT occupations include any quality-of-life features? If so, which ones and how do they work?
   - telecommuting
   - flex-time
   - special projects
   - paid time off
   - child care/child care referral/back-up child care

5. About what amount of time does an IT employee spend in training over a one-year period? What kinds of training/career development benefits do you provide for IT (e.g., tuition reimbursement, company-sponsored training, sabbaticals, etc.)?

6. Do you offer any other forms of rewards or benefits that you consider special or unique? If so, can you describe?

7. In your opinion, what elements of your reward system are most effective in recruiting and retaining high-performing IT employees?

8. To what extent are knowledgeable IT workers involved in actively recruiting for IT professionals in your organization? Please describe any marketing strategies they use to explain your organization's IT opportunities to potential candidates (e.g. at job fairs, colleges, universities, etc.).

PART III. Other Work Dimensions/Factors

1. Are any employees in your IT occupations in unions? If so, what impact does this have on your compensation and reward system?

2. For IT employees, what special approaches do you use related to work content, coaching/mentoring, special recognition, exposure to new technologies, rapid integration into the work force, knowledge sharing, etc.?

3. What changes in your HRM program, if any, do you think would improve your ability to attract and retain high-performing IT employees?

4. Do you have any other comments?

For Compensation Managers

Part I. Background on the Company

1. What is the nature of your business? What business products and/or services does your company provide?

2. How is your company organized (i.e., top-level organization structure)? How is your IT function organized; how does it fit within your general organizational structure?

3. What types of IT personnel do you employ (e.g., mission-focused or support; professional or administrative)? What other types of occupations do you employ?

4. What are your major HR concerns for your IT occupations/employees?

Part II. Background on the Company's Compensation System(s)

1. How many exempt employees are in your company? Are they paid under the same compensation system? If more than one, what types of employees does each cover?

2. What are the basic principles driving your compensation system for IT occupations?

3. What is the basic structure/approach to your compensation system for IT occupations?
    - number of occupations
    - numbers of levels/grades
    - range spread for levels/grades
    - factors that determine grade/level
    - salary increases and frequency of increases
    - how promotions are determined

4. What is the basic structure/approach to your compensation system for supervisory or managerial IT employees?

5. What pay surveys do you use to maintain your pay scales for IT occupations and how do you use them? How frequently do you adjust IT pay?

6. How do you set starting pay for IT employees? Who has the authority to set?

7. Have you introduced any significant changes in the compensation program in the past three years? Have you adopted any new policies or practices for your IT positions?

8. In your opinion, what aspects of your compensation system are most effective in recruiting and retaining high-performing IT employees?

PART III. Other Forms of Rewards for IT Occupations

1. Do you use other approaches to supplement IT pay? If so, what kinds, how do you determine who qualifies, how does it work, and who has authority to award?
   - signing/hiring bonus
   - retention bonus
   - referral bonus
   - on-the-spot awards
   - hot skills or tech pay premiums
   - paid overtime, team bonuses
   - variable pay, stock options, etc.

2. Does your reward system for IT occupations include any quality-of-life features? If so, which ones and how do they work?
   - telecommuting
   - flex-time
   - special projects
   - paid time off
   - child care/child care referral
   - back-up child care

3. What kinds of training/career development benefits do you provide for IT (e.g., tuition reimbursement, company-sponsored training, sabbaticals, etc.)?

4. Do you offer any other forms of rewards or benefits that you consider special or unique? If so, please describe.

5. In your opinion, what elements of your reward system are most effective in recruiting and retaining high-performing IT employees? What else do you think would help?

PART IV. Other Work Dimensions/Factors

1. Are any IT employees in unions? If so, what impact does this have on your compensation and reward system?

2. For IT employees, what special approaches do you pursue related to work content, coaching/mentoring, recognition, exposure to new technologies, rapid integration into the work force, knowledge sharing, etc.?

3. To what extent are knowledgeable IT workers involved in marketing your IT employment opportunities to potential candidates?

4. Do you have any other comments?

APPENDIX H:
SUMMARY OF RESEARCH FINDINGS

SIMILARITIES AMONG SECTORS

From the research, it is clear that private sector companies, state governments, local governments, academia, international governments and non-profit institutions are facing the same challenges of locating, attracting and keeping IT workers to meet the increasing demand for their talents. Their responses to this problem have been similar in some respects while quite different in others. While each category has designed and implemented different programs for the recruitment and retention of IT workers, there are similarities in the approaches:

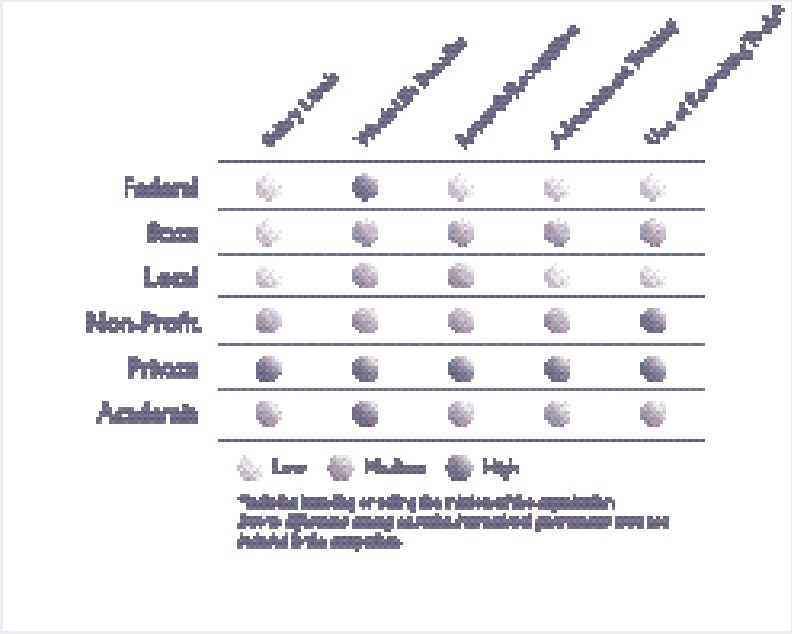
- Bonuses, broad pay ranges and non-pay benefits have been introduced and implemented into the compensation structures of companies, governments, universities and other organizations in the U.S.
- Broad banding or pay banding are on the rise in state governments, universities and those federal agencies with special authorities.
- Pay differentials directed to highly specialized IT workers, signing bonuses and bonuses for mission-critical projects are other offerings by these same employment groups.

When unable to attract sufficient numbers or quality of skills to their organizations, these same employers have moved to outsourcing and unclassifying their positions to provide for employees' contracting. Programming and systems analysis are two areas for which most outsourcing efforts are targeted.

OVERALL COMPARISON OF THE SECTORS

The chart below reflects a general assessment of the status of the various sectors included in the research. The level assignments (high, medium and low) are based on an overall evaluation of data and information obtained for organizations in each sector, in comparison to the other sectors. This evaluation does not reflect individual variations for any factor and is meant to serve only as a general guide.

OVERALL COMPARISON OF COMPENSATION AND WORK FACTORS



DIFFERENCES AMONG SECTORS

Private sector companies have many advantages over the other categories included in this research. Offerings of stock options and stock grants, pay above the market, paid time-off and more lucrative signing bonuses are just some of the benefits that private industry can use. These additional tools for recruiting and retaining IT workers, especially those with highly specialized or "hot" skills, are placing the public sector at a real disadvantage in competing for the same people. On top of these pay differences, the public sector suffers from a poor image of what it is like to work in the public sector - a perception, whether right or wrong, that is supported by numerous surveys and reports. The lengthy hiring processes and civil service bureaucratic rules do nothing to dismiss or diminish this perception.

Another difference between private sector companies and their public sector counterparts centers around basic compensation philosophies. Private sector has moved away from a centralized, one-size-fits-all approach including the traditional, internal-equity based pay and reward systems. Current compensation practices in private industry tend to emphasize pay-for-performance and external competitiveness over internal equity. Major changes in reward system design focus on paying for individual competencies versus jobs and moving from a commodity view to one of investment. Public sector - federal, state and local governments - continues to base compensation structures on broad labor market surveys with little

room for individual or occupational differentiation. Special salary rates for targeted occupations are only implemented after lengthy political and administrative negotiations - to the point that, by the time they are established, the data on which they are based may be no longer valid. The information technology occupation is changing so rapidly that this type of compensation approach is reactive and too little too late.

Use of Competency Models

The introduction of competencies as the basis for selection and assessment of IT workers is gaining support in the public sector. State governments are actually ahead of the federal government in this respect and cite anecdotal information as to the success of competencies in attracting a better quality of candidate and more accurately matching a candidate's IT skills against the job requirements. The private sector has effectively used competency models for a number of years as the foundation for hiring and compensation decisions. Research has continually shown that this approach supports the private sector's philosophy of rewarding individual performance and targeting special skill sets for recruitment into IT positions.

Competency modeling in the public sector has been fostered by a coalition of state human resource directors and OPM as the federal partner. Their joint efforts to develop computerized assessment and selection tools based on competency models, as well as their collaboration in occupational studies, are examples of the value of inter-governmental partnerships in improving recruitment and retention strategies for all occupations, but especially for the IT field.

Importance of Non-Pay Benefits

One important trend that applies to all sectors of employment is the desire for challenging work in a supportive environment. Exposure to new technologies through on-the-job exposure and technical training, career advancement opportunities, flexible work schedules, family-friendly benefits, good working relationships with supervisors and co-workers, and meaningful recognition for good individual and team performance contribute to IT workers' decisions on where to work in the IT field. These non-pay benefits, if used effectively and fairly, can close the gap for those organizations that are unable to offer lucrative, high-paying compensation packages. Workers at non-profit organizations and many government agencies have consistently identified the importance of a meaningful or even inspiring mission as a major motivator for remaining in a job where the tangible compensation might be below the norm. This fact was supported by an Academy Fellows Panel member who cited the desires of informally surveyed graduate students to work for such institutions (large or small), based primarily on their exciting, meaningful missions.

NEED FOR GREATER MEASUREMENT

While there are abundant examples of novel human resources initiatives at all levels of government and in the private sector to attract and retain IT professionals, there is also a paucity of information on what concrete gains have been or are expected to be achieved. That is, the Academy Project Team found little in the way of specific measures or indicators, with corresponding baseline data, to capture the impact (or even the anticipated impact) of recent HR innovations on the goal of recruiting and retaining IT professionals. Moreover, the Team found little indication that HR or IT managers had in place a formal process for gathering outcome information or for tracking results that could later be used for project evaluation purposes.

APPENDIX I:
INNOVATIVE PRACTICES

FEDERAL AGENCIES

Practice 1 OPM IT Pay Scale for GS-5 thru GS-12 positions

Practice 2 Recruitment and Retention Bonuses

Practice 3 Innovative Marketing Strategies (e.g. branding, use of IT professionals in total compensation, etc.)

Practice 4 Pay Banding and other Unique Salary Structures

Practice 5 Innovative recruitment practices, (e.g. web-based advertising, decentralized selection process, etc.)

Practice 6 Enhanced training and development programs (e.g. interns, COOP agreement, certification training, rotational, use of lateral assignments and promotions, etc.)

Agency	Practice 1	Practice 2	Practice 3	Practice 4	Practice 5	Practice 6
NIH	✓	✓				
DOI	✓					
HHS	✓		✓			
FDIC	✓			✓		
NIST		✓		✓		
AIR FORCE						
NRL		✓		✓		
TREASURY	✓	✓				
PEACE CORPS	✓		✓		✓	
VA	✓		✓			✓
OCC				✓		✓
CUSTOMS	✓					
POSTAL SERVICE		✓	✓	✓	✓	✓
DEFENSEACQUISITION	✓	✓	✓		✓	✓
AO of US COURTS		✓	✓	✓	✓	✓
COMMERCE	✓		✓		✓	
ENERGY	✓		✓			
SBA	✓		✓			
LIBRARY OF CONGRESS	✓					
AGRICULTURE						
ARMY		✓			✓	
SOCIAL SECURITY	✓	✓	✓			
STATE DEPARTMENT		✓				
OPM	✓	✓	✓		✓	
DEPARTMENT OF JUSTICE					✓	✓
DSA		✓	✓			✓
GAO			✓			
NAA				✓	✓	
IRS	✓	✓	✓		✓	✓

PUBLIC SECTOR: STATES

Agency	NJ	SC	VA	KS	MN	WS	MO	NV	OR	UT	WA	AZ	TX
Special Salary Range/Differential Pay			✓			✓				✓		✓	
Broadbanding/Paybanding		✓	✓			✓							
Recruitment/Signing Bonuses			✓		✓	✓		✓					✓
Referral Bonuses					✓			✓		✓			
Hiring Above Minimum Rate		✓	✓		✓				✓				
Skills Bonus				✓		✓		✓		✓			✓
Skills Acquisition/Bonus Pay		✓	✓	✓		✓		✓					
Specific or Mission Critical Project Bonus/Pay				✓				✓		✓			
Pay for Performance Increases		✓	✓							✓			
Use of Market Based Survey Data		✓	✓							✓			
Improvements to Recruiting and Hiring Processes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Retention Bonuses			✓			✓							
Alternate Work Schedule/Flex Time			✓	✓	✓		✓				✓	✓	✓
Telecommuting			✓	✓	✓		✓		✓	✓	✓	✓	✓
Education Reimbursement	✓						✓	✓	✓			✓	✓
Enhanced IT Training/Employee Development Programs	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
Employee Contracting	✓			✓								✓	
Base Pay Increase for IT	✓		✓	✓	✓			✓	✓	✓	✓		✓
Higher Profile Projects				✓								✓	

OTHER:

NJ simplified classifications by implementing competency-based model
MN reduced waiting period for pay adjustments
WS repeal of several Civil Service recruiting restrictions
MO Deferred Comp, cafeteria plan for benefits
OR Formed IS Cooperative training Program for filling permanent jobs.
WA Enhanced Benefit package

PUBLIC SECTOR: LOCAL GOVERNMENT AND UNIVERSITIES

Agency										
Special Salary Rates/Differential Pay	✓				✓					
Broadbanding/Payranding					✓		✓	✓	✓	✓
Recruitment/Signing Bonuses			✓		✓					
Referral Bonuses										
Hiring Above Minimum Rate		✓	✓		✓	✓				
Skills Bonus	✓									
Skills Acquisition/Bonus Pay										
Specific or Mission Critical Project Bonus/Pay					✓					
Pay for Performance Increases					✓		✓	✓	✓	✓
Use of Market Based Survey Data	✓		✓	✓	✓	✓	✓	✓	✓	✓
Improvements to Recruiting and Hiring Processes	✓	✓		✓	✓					
Retention Bonuses					✓					
Alternate Work Schedule/Part Time		✓				✓				
Telecommuting	✓	✓				✓				
Education Reimbursement					✓					
Enhanced IT Training/Employee Development Programs	✓			✓	✓	✓				
Employee Cafeteria	✓									
Base Pay Increase for IT		✓			✓	✓	✓	✓	✓	✓
Higher Profile Projects					✓					

OTHER:

Phoenix, AZ has a Child Care Center
Virginia Beach, VA Relocation expenses
San Diego, CA created non-profit organization for IT support

PRIVATE SECTOR

	Company A	Company B	Company C	Company D	Company E	Company F
IT Compensation System Separate? (Y/N)	No	No	No	No	No	No
COMPENSATION SYSTEM						
Market Based	✓	✓	✓	✓	✓	✓
Broad Pay Bands	✓	✓	✓	✓	✓	Varies
Regular Merit Increases	✓	✓	✓		✓	✓
Regular COLA						
Number of Times per Year Survey Salaries	1	1	1	1	2	1
SUPPLEMENTS TO BASE PAY						
Signing Bonus	✓	✓	✓	✓	✓	
Retention Bonus	✓		✓		✓	
Referral Bonus	✓	✓	✓	✓	✓	
On-the-Spot Awards		✓	✓	✓	✓	
Hot Skills Premium					✓	
Paid OT	✓					✓
Variable/At-Risk Pay		✓				
Stock Options						
QUALITY OF LIFE FEATURES						
Telecommuting	✓		✓	✓	✓	✓
Flexible Schedule	✓	✓	✓	✓	✓	✓
Special Projects						
Paid Time Off						✓
Concierge Service	✓	✓		✓		✓
Dependent Care	✓	✓	✓			✓
RECRUITING						
Developing a Brand Name	✓		✓	✓	✓	✓
Involve IT Professionals	✓	✓	✓	✓	✓	✓
Reduce Recruiting Time	✓					

APPENDIX J:
NATIONAL INDUSTRY OCCUPATION EMPLOYMENT MATRIX[1] INDUSTRY REPORT

Below are the 10 occupations selected employed in the Federal government industry sorted by 2008 projected employment.

Note: Total, all occupations is presented for comparison purposes.

Occupation	1998 Employment		Projected 2008 Employment		Change, 1998-2008	
	Number	Percent Distribution	Number	Percent Distribution	Number	Percent
Total, all occupations	1,819,100	100.00	1,654,600	100.00	-164,500	-9.0
Systems analysts	54,357	2.99	71,634	4.33	17,277	31.8
Computer operators, except peripheral equipment	20,853	1.15	11,909	0.72	-8,945	-42.9
Engineering, natural sciences, and computer and information systems managers	10,480	0.57	10,721	0.65	241	2.3
Computer programmers	7,212	0.40	4,881	0.29	-2,331	-32.3
All other computer scientists	3,347	0.18	4,393	0.26	1,046	32.2
Computer engineers	2,480	0.14	2,781	0.17	321	13.1
Data entry keyers	2,885	0.16	2,028	0.12	-857	-29.7
All other communications equipment operators	1,588	0.09	980	0.06	-620	-39.5
Data processing equipment repairers	671	0.04	590	0.04	-82	-12.1
All other telecommunications equipment mechanics, installers, and repairers	88	0.00	69	0.00	-19	-21.9

[1]Taken from Bureau of Labor Statistics database by defining Information Technology as an industry for comparison purposed.

APPENDIX K:
IT OF THE FUTURE

An important issue is the definition of who is an IT professional. Most of the studies and articles focus on IT professionals with traditional roles such as programming, systems analysis, computer engineering, and the like. But the rapid and continuous change of every aspect of IT (hardware, software, telecommunications, storage, speed, function, skills, etc) is changing this definition. Now a combination of technology, business process, interpersonal skills and other competencies is necessary to be successful in the IT work environment.

At the same time the organizational location of the IT worker is also changing. No longer are all IT workers located in a central organization. Many are dispersed throughout the business and program offices in supporting roles.

INCREASED RELIANCE ON IT SYSTEMS

Federal agencies have developed IT solutions in response to slower budget growth and the demand for increased productivity and service delivery. Additionally, agencies are moving to e-government solutions for service delivery to their customers and the public. There is increasing pressure on the federal government as a whole to provide real time delivery and management of government information as use of the Internet and other IT systems becomes a ubiquitous resource in many aspects of our society.

RANGE OF DIFFERENT SOLUTIONS

At the same time, many federal agencies are still dependent to a greater or lesser extent on “legacy” systems. These “legacy” systems require IT skills such as the ability to program in older computer languages, e.g. COBOL, or knowledge of older operating systems and hardware. Other agencies have replaced some or all of their “legacy” systems or developed new front ends to these “legacy” systems to provide their users more access to information. These new systems require IT expertise in use of the internet, newer operating systems, software and hardware.

This creates a dual challenge for IT departments that must first support the older “legacy” systems with the requisite skills, while building new systems and technological innovations that require new skill sets. This situation is particularly true in the federal agencies that cannot abandon their “legacy” systems since many of them are linked with customers' systems. Skill sets to support both levels must be available to federal agencies and their IT

managers. These skill sets may be in house or contract, full time or temporary, bought (hired fully skilled) or "home grown" (trained or mentored).

Based on this research, no one specific solution will meet all of the needs of every federal organization. Instead, any recommendations must be able to handle the full range of IT approaches that exist today and that will exist in the future in federal agencies nationwide. This will by definition include access to legacy system skills, as well as access to new skills that exist today and new skills that will exist in the future.

THREE ELEMENTS OF THE FUTURE OF IT

Adapting to and accommodating IT change and the rapid pace of IT change is a fundamental aspect of the workplace today and in the future. Given the history of IT and the evolution of IT in the last 10 years, it is impossible to predict with specificity or accuracy what IT will look like and what IT skills will be needed over the next 10 years. The only thing that is certain is that IT will continue to rapidly evolve and improve and offer new and innovative solutions to the business and mission needs of the federal government. The study assumes three elements of the future of IT:

1. **Cross department alliance management**
   As new business requirements are being introduced, there is a need for strong partnerships between IT and program departments to improve organizational effectiveness and to solve business challenges. IT experts must increasingly have strong business knowledge and program/business experts must understand the value and function of IT. For example, to develop the requirements, build and implement a new Human Resources (HR) system, an inter-disciplinary team with representation from, at a minimum, the IT, HR, Finance and program offices would be required to ensure that the new system would address all of the necessary requirements to function effectively. Managing such a cross department/cross functional team would in turn require strong alliances between the key managers in each of these departments and strong top management support to achieve a successful result. Today's organizations must share information and coordinate their actions in many aspects of their business in order to accomplish the agency or organization mission. IT is no exception.

2. **Contract management and system integrity**
   In FY 2001, approximately 70 percent of the $42 billion dollars invested in IT activities went to contractors. A key factor in the future of IT will be the continued use of outside contract support in lieu of, or to supplement, in-house staff. The growing complexity of IT applications mandates that some of this new work will of necessity be performed through outsourcing, a phenomenon which is expanding in both private and public sectors. Companies and governmental agencies are

recognizing the need to rely on outside expert help to keep up with the dynamics of the technologies and to concentrate internal resources on core functions, which will certainly include contract and project management, but may required broad technical skills for oversight and review purposes. Blending internal and external, as well as business and IT, workers into multi-disciplinary teams to accomplish the evolving work will required a balanced view of program and technical competencies, and fair and competitive compensation and rewards. This practice brings into focus the question about what is the proper balance of core and contingent workforces and the appropriate infrastructure, including contracting and human resource management systems, needed to maintain equity and retain the commitment of the workers.

Increasingly, IT systems are required to share data to promote greater efficiency, fewer inaccuracies and inconsistencies, and greater productivity (e.g., one source data entry). System integrity within and between systems is therefore increasingly important for IT functions.

3. Citizen centric requirements

Federal agencies are moving to the use of e-government strategies which will change the frame of reference for federal IT. Agencies used to collect and organize data to give to decision makers, the public, Congress, etc. The source for this data is now electronic instead of hard copy. This is an important change in and of itself. However, IT and Web-based technologies provide for moving from simply providing data to developing institutional mechanisms that will provide citizens with access to the transaction itself. In the future, agencies will provide the means to let citizens "do their own thing" and accomplish mission delivery more directly, more rapidly and electronically to the individual citizen where and when the service is needed. Social Security benefits calculation, visa or passport, income tax return are current examples of a trend which will grow exponentially in the years ahead. This electronic service delivery has important privacy implications which will need to be resolved prior to implementation of such systems.

Demand for Different IT Skills

In the assumptions made for this study and based on the Phase I research, IT skills required in the future will be different from IT skills required today. IT expertise will need to accommodate changes in system programming languages, operating systems, telecommunications, networking, hardware and software. As technology grows and permeates all business units and program areas, it becomes more difficult to define the complex and increasingly diverse IT workforce. It is no longer possible to think of a monolithic workforce or singular job series as it relates to acquiring, retaining and developing the necessary skills to accomplish ever-changing, cutting-edge IT work.

At the same time that IT is diversifying, the IT workforce will need to have more than these specific and technical skills. Increasingly, IT projects are bigger, more complex, more costly and more cross functional (involving many organizations and disciplines to solve a given business problem). IT experts will need to have "soft" skills as well as the "hard" technical skills. The "soft" skills include project management, business area expertise, understanding of the strategy and mission of the organization (big picture), contract administration, business process, interpersonal, leadership, communication, etc.

GROWTH AND FLEXIBILITY OVER TIME

Based on these assumptions, any study of IT skills requirements and any compensation system solution must be flexible and able to adapt to and accommodate changing needs and changing environments over time. It must be adaptable to the specific needs and strategic decisions of any given agency and provide a means of addressing the very different skills sets of both legacy and modern systems and the transition from one to the other within the resources, risks and mission needs of different federal organizations and agencies, as well as the changing skills, both "hard" and "soft" required for IT jobs over the next 10 and more years.

APPENDIX L:
IMPLEMENTATION ISSUES OF AN HR SYSTEM

PAY

It would be a mistake to ignore government's poor track record with the traditional merit pay. This is a broad problem at all levels in government and that record often makes public employers reluctant to tackle the problem.

Significantly, there is a high level of interest across government in moving to a pay-for-performance platform. Realistically the step-in-grade practice that has been a core principle of the GS has few supporters. At least one book and any number of articles have been written about the problem of entitlement in government. There are few supporters of the virtually automatic, "living-and-breathing" increases in the federal pay system.

All of the demonstration pay systems starting with China Lake in 1980 have adopted some form of pay-for-performance or pay-for-contribution as the basis for granting salary increases. That is also true of the agencies that have been granted authority to adopt new pay systems, including FAA and IRS. John Sturdivant, the former President of AFGE, was quoted some years ago as believing his "union has to learn to live with merit pay." For reasons that go beyond the federal experience, the traditional phrase "merit pay" has been effectively dropped in government discussions. It has been replaced by references to pay-for-performance and to pay-for-contribution. It is still the dominant phrase in the private sector but it is slowly being supplanted by other phrases.

Actually in the corporate world, pay-for-performance encompasses two separate but related concepts—the policy governing annual salary increases and a second policy providing for cash incentives to reward employees for performance. The latter is seen as a more flexible and effective way to reinforce the importance of performance. Corporate executives, of course, have traditionally had a portion of their compensation package tied to company performance. Now that philosophy is being extended down to the non-management work force.

In the public sector, pay-for-contribution is the phrase that is widely used in discussions of alternatives to the step increase policy. Although a fully defined operational definition has not emerged, it is the basis for determining salary increases in at least three demo projects, including the pay systems being tested in the Naval Research Laboratory, the Air Force Research Laboratory, and the DoD Acquisition Workforce.

In concept, pay-for-contribution is very similar to "competency-based pay", a new model for salary management that is emerging rapidly in the private sector. Most competency-based pay programs are only a year or two old and there is not enough experience to fully evaluate them. There are, however, a number of compensation experts who contend it will become the next model for salary management. One of the most important features of a competency-based program is the emphasis that can be placed on technical knowledge where it is important to a job family. The concept is important in each of the three proposed models for the IT workforce.

CONTINUOUS LEARNING

To reduce the overall investment required and to vastly improve training effectiveness, organizations are turning more and more to computer-based training or e-learning. In a December 2000 article, "The E-Learning Revolution," in ASTD's Virtual Community, Patricia Galagan identifies e-learning most compelling features as accessibility and scalability. She also explains that technology has given training "the possibility of one-on-one for every learner. In its July 2000 report of findings, the Task Force on Federal Training Technology noted that "Access to training is the key to a competent and responsive workforce." The Task Force outlines recommendations for accelerating the use of learning technology across the federal government. Among the recommendations are an endorsement of establishing external partnerships with the private sector, academia, and non-federal stakeholders; and the establishment of a government-wide fund for learning technology.

Another cost-related issue is the pattern of training spending. The Department of the Treasury study found that, to a large extent, money spent on federal training is not well targeted. The study cited a survey of managers and executives at the General Services Administration, where 37 percent agreed with the statement that funds were "spent loosely without much oversight or review." The Treasury study cites various training programs in the federal government that do a good job in targeting training spending. These include the U.S. Secret Service, where each staff member has an individual development plan that are the basis of a yearly supervisor/employee discussion and that feed into agency-wide strategies and programs; and the Bureau of the Public Debt, which estimates and plans for its needs in some detail two years in advance.

These approaches—extensive use of "learning assignments" and e-learning approaches, government-wide consortium, partnering with the private sector and academia, and more targeted training—continuous learning will require an investment, and a relatively heavy up-front investment. Without this investment, though, the federal government will not be able to attract or retain qualified IT professionals; nor will it be able to maintain a workforce of qualified IT professionals.

Competency Framework

To help to achieve targeted spending and to provide basic informational tools for organizations and IT professionals, all of the proposed HRM Models include a government-wide competency framework. The Chief Information Officers' Council (CIO Council) is the in the best position to develop and maintain this framework.

Such a framework would be broad, defining the required competencies and associated learning opportunities for the various IT specializations and levels. The use of competencies drives a process that relies on modeling high performers. The development, transfer and application of learning are then integrated into one continuous framework. The framework should include techniques and approaches to enhance individual learning such as self-assessment tools, personal learning plans, modeling, learning diaries, learning contracts or agreements with defined measurements, supervisory feedback and networks.

Each agency must carefully review the overall government-wide framework for application to its own IT workers. Individual agencies or professional workgroups should then define and incorporate additional specifics that apply locally. Certifications or skills measurement tests could be included in the list of competencies for those specialties requiring such qualifications.

Responsibility and Commitment

For continuous learning to work, there needs to be a balance between management responsibility and employee initiative. While a certain level of responsibility rests with the individual to seek out training that expands his/her IT skills base, federal managers must be the ones to pay for training that supports the technology evolution occurring in their agencies. Managers must provide learning opportunities that are directly related to the IT worker's job or project as well as those that support anticipated future work requirements. The individual IT worker, though, must also accept responsibility for participating in those activities that enhance his/her value by making investments of time and dollars as appropriate.

Organizations that recognize the importance of continuous learning are ready to commit the resources, structures, and policies to support and enhance learning. IT organizations, in particular, often request employees to quickly acquire experience while minimally interfering with the ongoing work of the organization. The individual IT employee must figure out how to balance these dimensions.

Cost of Continuous Learning

A July 1995 U.S. Merit Systems Protection Board study (Human Resource Development in the Federal Government) found that federal training budgets were 0.75 to 1.0 percent of payroll. More recently, a Department of Treasury Study (Responding to the Crisis in Information Technology Skills)

found that Department-wide training for IT professionals was 1.53 percent of payroll; or about $1,000 per IT employee.

A 1998 study by the American Society for Training and Development benchmarked 750 organizations to identify the state of the industry regarding training and development. All benchmarked firms spent an average of 1.81 percent of payroll on training, or $649 per employee. "Leading edge" firms—those that ASTD say represent the "pinnacle" of training practice in the United States—spent an average of 4.39 percent of payroll on training, or $1956 per employee.

Clearly, the federal government under-invests in training. In fact, The National Performance Review found that federal managers tend to view training as a cost, whereas leading edge firms view it as an investment.

Although an investment in training does not come cheap, the cost of continuous learning, though, need not be prohibitive. In fact, the ASTD study, Sharpening the Leading Edge, states that "A good starting place for your leading edge make-over isn't how much you spend on training, but rather the things you do to improve workplace learning and performance in general." The study goes on to explain that leading edge firms align their training with a number of innovative practices that can be categorized into three groups:

- High performance work practices, such as self-directed teams, and access to business information.
- Innovative compensation practices, such as profit-sharing or group-based pay.
- Innovative training practices, such as mentoring or coaching programs and training information systems.

INVOLVING IT MANAGERS AND PROFESSIONALS IN RECRUITING

Some human resources professionals have engaged their agency line managers as partners in seeking new ways of attracting and hiring quality candidates in hard-to-fill occupations such as information technology. When this partnership has been formed, agencies have been able to experiment with improved "selling" techniques that highlight their challenging missions and accompanying occupations.

In redefining recruitment, agencies should replicate what the private sector does in developing formal recruitment plans in which program managers are held responsible for recruitment with support from the human resources office. This approach is also being used by many states, local governments, colleges/universities and non-profit organizations.

Use of Recruitment and Referral Bonuses

Every private sector company interviewed and almost every public sector organization researched for this project offer signing or recruitment bonuses. While the use of such bonuses is on the increase in most IT employment arenas, the federal government has been inconsistent in their use. Some agencies are adopting them more readily for difficult-to-fill jobs while others have not used them at all.

Regardless of the basic structure of a new compensation model for the IT occupation, signing or recruitment bonuses should serve as an integral component. The amount of the bonuses should also be significant enough to serve as a motivator for highly competitive positions. Existing law allows for up to 25 percent of base salary and agencies should consider offering the maximum amount to attract highly talented IT workers. The approval of such awards should also be assigned to the lowest management level possible—preferably the hiring manager—with guidance and support from the human resources office.

Referral bonuses have been effectively used by private and public sector organizations, particularly for IT jobs. The benefits of referral bonuses are numerous: candidates are "pre-screened" by the referring employee; the referee has already done his/her "homework" in learning about the organization; referred candidates who are hired usually stay longer than other candidates; and, recruitment costs and time are reduced. A few federal agencies were offering referral bonuses until early 2001 when the Office of Personnel Management (OPM) issued a notice to agencies that these bonuses were in violation of federal law. Agencies were advised to immediately stop using referral bonuses. However, recently OPM reversed this decision and has now advised agencies that they may offer referral bonuses. This reversal is a good decision since referral bonuses should be integrated into the overall IT compensation structure and used by agencies to locate and attract the required IT talent. Agencies will also have the flexibility to design their offerings of bonuses to meet their respective cultures and needs.

To date, a number of federal agencies have begun to redefine how recruitment is carried out in the federal sector. The Social Security Administration (SSA), with its headquarters in Baltimore, Maryland, provides a good example of federal branding. SSA has identified those things that are valuable to potential candidates and communicates these things in all of its vacancy advertising—the broad scope and importance of the agency's mission, rapid pay increases for entry-level hires, paid overtime, flexible schedule, free parking, on-site child care and fitness facility, a campus-like environment, and excellent retirement.

BRANDING

Getting the message out about one's organization should include many outreach activities. In addition to vacancy announcements and advertisements, outreach activities could include information provided on internet sites, job fairs, relationships with high schools and universities, intern and cooperative education programs, press releases, paid advertising, unpaid advertising, and any other means of getting the word out. In addition, effective new mechanisms of advertising job opportunities and accompanying benefits are used by private sector companies and many public sector organizations. Advertising on the Internet is increasing, as is use of paid advertising in professional journals, local newspapers, radio announcements and other media. Unpaid advertising is also being tapped by private and public sector organizations competing for IT talent. Press releases, articles in newspapers and other unpaid chances to "sell" the organization are used to catch the eye of potential IT workers. Federal agencies not already utilizing these vehicles should explore them since potential candidates want to gain a sense of the employer's offerings in ways that a job vacancy announcement cannot provide.

A number of federal agencies have moved past the traditional way of posting vacancy announcements with the hope that well-qualified candidates will see the announcements on USAJOBS or their agency's own website. The key is to operate under a new paradigm that goes beyond posting announcements and waiting for the lists of eligible candidates.

APPENDIX M:
IMPORTANT CONSIDERATIONS IN DESIGNING A SYSTEM FOR TOTAL COMPENSATION

MARKET SURVEYS

Market surveys are a necessary tool and standard practice for managing a market-based pay system. Market surveys enable organizations to determine salary levels for its employees based on prevailing or competitive rates in the labor market. As a market-based system, Model Two requires a market survey for initial design and ongoing maintenance.

Alternative Sources of Market Data

Private-sector organizations use one or more of a number of approaches to obtain prevailing or competitive rates in the labor market.

Off-the-Shelf Surveys

There are three consulting organizations that conduct national salary surveys of IT employers: William M. Mercer, Watson Wyatt, and People3, a subsidiary of the Gartner Group that specializes in human resources issues. The former two firms are prominent compensation and benefits consulting firms, while the Gartner Group consults on IT problems.

Mercer actually conducts four relevant surveys: (1) the Information Technology Compensation Survey, (2) the eCommerce Compensation Survey, (3) the Telecommunications Compensation Survey, and (4) the Information Technology Association of America Compensation Survey. Although a number of the benchmark jobs are the same in each survey, the survey reports are designed for different industry segments.

Watson Wyatt publishes an Industry Report on Information Technology Personnel Compensation. The most recent edition included data from over 4,000 employers. In addition, Wyatt covers selected IT jobs in its top management, middle management, supervisory, and professional/scientific surveys.

People^3 publishes a survey similar to Mercer and Wyatt but because it recently entered this business market, its database is smaller. It claims to offer supplemental information on recruiting, retention, career development, and reward practices. It also produces a quarterly reports capturing emerging trends.

Each of the survey organizations collects data for roughly 200 benchmark jobs and levels, and reports results for 100 or so industry groups. Mercer's database appears to be the largest and the People3 database the smallest. The level of detail reported makes each survey far more extensive than the old BLS surveys. Each survey has its proponents and is widely used.

None of these surveys, however, meets the standard for quality established by the BLS. Each of the firms relies on mailing out thousands of questionnaires, with the incentive to participate a reduced price for submitting pay information. The job matching is left completely to the participating companies where it is typically performed by a junior specialist in compensation. For quality control, the firms rely on data entry software to check for outliers. There is no way to determine if the matches are valid or reliable.

Perhaps more important is the validity of the employers as a representative sample, particularly in local areas. The federal IT work force is concentrated in the Washington-Baltimore corridor, and in another handful of cities (e.g., Atlanta, Columbus, Denver, etc.). A full 30 percent of the workforce is located, according to OPM, in the "rest of U.S." That means the survey data have to be representative of the employers in the cities where IT jobs are concentrated and also across the country. Unfortunately, the surveys as published by these firms do not fully meet this test.

By-Invitation-Only Surveys

It is particularly important to point out that the leading IT firms typically do not participate in these broader, off-the-shelf salary surveys. While they do not all follow the same practice, they tend to focus on more private, "by-invitation-only" surveys of competing companies. That enables them to develop a more precise understanding of their labor markets and to control the companies that exchange data. Typically these surveys are conducted by consulting firms (to avoid anti-trust charges) but the surveys are available only to participating companies. It is unlikely that the companies will provide access to the data or allow the federal government to participate.

Bureau of Labor Statistics Survey

A third source for salary data is the BLS. The current federal government process for making adjustments to the GS has been based on pay survey data developed by the BLS, or at least it was until the BLS changed its survey methodology several years ago. For reasons that were not fully explained at the time, the BLS stopped its traditional salary survey based on benchmark jobs, and is now focusing on its Employment Cost Index and collecting data based on a sample of the workers in each employer that participates in its surveys. The new methodology makes it impossible to determine the level of pay for incumbents in a specific job. As a result, the Pay Agent, which recommends the annual adjustment to the GS to the

President, informed the BLS that it would no longer use the BLS survey information for this purpose.
The BLS surveys were never fully adequate for "pricing" IT jobs. The time it took the BLS to collect and publish the results of its survey was always too long to be useful in the dynamic IT market. Moreover, their surveys did not cover the specific, high demand jobs that are covered in other IT industry surveys.

The BLS surveys did, however, establish high standards for conducting surveys. BLS plans its surveys as a stratified sample of employers by industry and size (based on number of employees in an establishment or work site). The sampling strategy also covers all industry sectors, including government, health care, and all of the major business groups. That enables them to defend their summary statistics as valid. Finally, until they changed their methodology and moved away from the benchmark job concept, they took the time to meet with each participating employer and carefully matched the employer's jobs to the benchmark job descriptions.

Commissioned Survey
An alternative would be to commission one or more of these firms to conduct a national survey that meets federal requirements. Since this represents an extension of the existing surveys, the firms have expressed a high level of interest in this prospect. It may be that the cost could be held down if the firm(s) was free to sell the summary report. One of the reasons firms participate in surveys is that they have the same need for market data as the federal government, and if there is a commissioned survey, the participants would expect access to the data on some basis. If the decision is to contract for the survey, then there is a fourth possibility—the office within DOD's Civilian Personnel Management Service (CPMS) that conducts the Federal Wage System (FWS) surveys. That office, with its data collectors across the country, rivals BLS in its survey capability. Since they already conduct surveys in over 100 locations nationwide, they could readily gear up to conduct an IT survey. While the three firms could also conduct a similar survey, with client meetings for job matching, only the FWS survey people are accustomed to this approach.

Regardless of which organization conducts the survey, the CIO Council will need to play an ongoing role in planning and conducting any survey. The survey plan, including the choice and descriptions of the benchmark jobs and the sampling strategy, will need to satisfy federal requirements.

SPECIFYING THE COMPENSATION ALIGNMENT WITH MARKET PAY RATES

The collection of market data is only the starting point. The goal is to maintain a compensation program that enables the organization to recruit, hire and retain an adequately qualified staff. The base salary is only a piece of that puzzle. In the private sector, employers are ready to offer an array of cash bonuses, stock ownership opportunities, along with a variety of work/life benefits that often vary from region to region and industry to industry.

The IT labor market and particularly the "scarce skill" (or hot skill) market is intensely competitive. In that environment, responding quickly to trends and new practices is essential to being competitive. Despite the recent economic downturn, there is still an imbalance of supply and demand that will provide justification for IT employers to adopt unprecedented practices to attract necessary talent. New practices gain acceptance quickly and a willingness to innovate is important.

With a traditional salary program, the salary range midpoints are normally aligned with a specific market pay level. For most companies, that level is the market average or mean salary. In other words, the average of the salaries for jobs assigned to a salary range is established as the midpoint, and the minimum and maximums of the range are calculated from the midpoint. On that basis, when someone is paid at the midpoint, his or her salary is competitive with the labor market. For a few, more aggressive companies, the midpoints might be based on the seventy-fifth percentile salary or the mean plus 10 percent. These decisions reflect the company's compensation strategy, which is related to the caliber of employees they want to hire.

Generally it is argued that pay at the midpoint is appropriate for an average performer who has been in the job long enough to perform all facets of the job. In other words, they are at the full performance level. People who are still learning their jobs are logically paid below the midpoint and therefore below market. The "star" performers should be paid above midpoint. That is a common salary management strategy in the corporate world.

In the studies preceding the enactment of FEPCA in 1990, the fourth step in each range was aligned for planning purposes with the market median less 5 percent. Of course the GS was never increased to this level so it is a theoretical linkage only.

In a broad banding environment, there are no range midpoints. Moreover, each job is paid within the range based on market data. The bands are planned so the bottom of the band is lower than the starting salaries for the lowest paid job and the top is above the highest pay for the jobs assigned to the band. Within that range, market data are used to determine appropriate pay rates.

Policy Considerations

The basic policy question relates to the quality of IT specialists the federal government wants to attract and retain. The underlying assumption with a market-based pay program is that higher salaries enable an employer to attract higher better qualified job candidates. The argument has never been fully tested but average market salaries presumably lead to average candidates.

However, that is probably overly simplistic. In the IT labor market, base salary is only one of several job considerations that affect a candidates search for a job. Among those considerations are the prospective employer's commitment to continuous learning, opportunities to work on leading edge systems, the quality of management, and flexible work hours.

Employers competing in the IT labor market have also adopted a variety of additional cash payments, including recruiting and retention bonuses, hot skill bonuses, and performance incentives. In a high-demand environment, job candidates can select the employer that best fits their requirements and that promise the best job and career prospects.

The fact is that IT labor markets tend to emphasize somewhat different practices in different labor markets. The supply and demand for specific skills varies, depending on the mix of local employers. San Jose, for example, is a very different IT labor market than Columbus, Ohio. Corporations have enormous flexibility and can respond very quickly to new practices. That makes it important to monitor local trends, and to adopt policies that provide comparable flexibility.

Federal agencies need to develop a recruiting and retention strategy that builds on their strengths as employers and downplays possible deficiencies (e.g., the lack of opportunities for stock ownership). Within that context, the alignment of the salary program with prevailing market pay rates and the use of other cash payments is a focal program design issue. Companies that are regarded as unattractive places to work often are forced to pay above average salaries simply to offset deficiencies. Conversely, the better employers may not have to offer fully competitive salaries.

One issue that may be difficult to resolve is the importance of a promising future and continued competitive salary increases. The annual adjustments to the GS have not been fully competitive in the IT labor market and that cannot continue if federal agencies want to attract and retain fully qualified IT workers. Moreover, the roughly two-year time lag in adjusting the GS is also a problem. In some markets, IT employers have made market adjustments twice a year. Job candidates need to believe that their pay will remain competitive over time. There has to be a commitment to keeping the program competitive.

The commitment has to be considered relative to another policy issue—the goal of paying for performance or contribution. It has proven to be politically difficult to gain support for fully competitive salary increases when those increases are across-the-board. That practice has effectively kept most IT salaries below market levels. If there is solid support for pay-for-performance, then it will be necessary only to pay the better performers competitively.

The alignment of base salaries with market rates is then a fundamental policy decision. It controls the incremental cost of the program. It also influences the caliber of employees federal agencies will be able to attract. If those agencies are able to enhance the non-cash elements of the total compensation program, it may not be necessary to pay everyone fully competitive salaries.

APPENDIX N:
PAY ISSUES

CASH COMPENSATION

The current federal system for cash compensation includes base salary in addition to bonuses or lump-sum payments. The GS system is the mechanism in the federal government that governs how base pay is initially set and subsequently managed. The GS system provides for fifteen grades in addition to various executive-type levels. The system is particularly inflexible, as distinctions between grades are small and pay ranges associated with each grade are very narrow.

To improve the federal government's ability to attract and retain IT talent, two different alternatives to the current system are laid out below. Both approaches increase the flexibility. The first approach—Model One—makes minimal changes and, therefore, increases flexibility only marginally. The second approach—Model Two—goes to a broad and very flexible system.

Pay-for-Performance Differences Between the Private and Public Sectors
Pay for performance has always been central to salary management in the private sector. Despite criticism from people as prominent as Dr. W. Edwards Deming, it is more prevalent today than it was 20 or 30 years ago. One of the reasons for its popularity is the overriding importance of performance in the corporate culture. The criticality of performance is accepted and understood by every employee. Another reason for its popularity is the rejection of the alternatives — e.g., step increases — in the corporate environment. There has been a strong backlash against any policy that creates a sense of entitlement. Finally, there are widely shared corporate beliefs that hard work and high levels of performance should be recognized and rewarded.

The fact is that it is easier to make pay for performance successful in the private sector for the following reasons.

- There is still a veil of confidentiality that surrounds the performance appraisal and merit increase process. Employees certainly know which of their co-workers are seen as the stars but they do not have access to the ratings of their co-workers.

- Corporate employees do not typically have the right to grieve or question their ratings. Few corporate employees are unionized (now less than 10

percent) and pay for performance is not common in those work groups. There may be informal grievance procedures but employees have to be concerned about questioning their supervisor's judgment.

- The pay for performance policy covers everyone from the CEO to the lowest office support positions. Executives and managers have matured and moved into management ranks in a culture where pay for performance is taken for granted. Moreover, their salary increases are based on an appraisal of their performance; that is true for everyone. The managers are probably no more comfortable with their role in discussing appraisal results with their people but they know it's required. They also have significant income riding on the corporation's performance.

- Corporations tend to invest more time and money to help managers develop the skills they need to manage their subordinates. There are stories about how much time people like GE's Jack Welch spend discussing performance with their subordinates. Corporations also spend more time and money developing their performance management process and in communicating with managers and employees on issues like compensation and pay for performance. There are still problems but corporations take these issues seriously and work at improving their practices.

- Corporations are more likely to maintain competitive pay programs. That means salaries and salary increase budgets are in line with market levels. When salaries are allowed to fall behind the market, managers and supervisors are more likely to feel pressured to give a full increase to everyone.

- The budget for salary increases imposes a discipline and forces managers to differentiate among their people. Salary increase budgets are planned so funds are adequate to reward only a limited number of high performers. Actually the trend to introduce cash incentives has reduced the pressure on managers.

- The unstated but common purpose is to recognize and reward the better performers. There are poor performers who are occasionally dismissed because of poor performance. However, the focus is on the "stars" which gives the merit policy a much more positive connotation than it has in the public sector. In government, there is a tendency on the part of some political leaders to define the purpose in demanding pay for performance as denying increases to poor performers. Too often there is little mention of the stars or their value.

Significantly, most of these differences can be addressed in planning the transition to a pay-for-performance policy. The transition to a pay-for-contribution policy represents a significant organizational change. It will affect the

culture and the way employees view the organization. The shift to a pay-for-performance policy is more than a system change. It is a major shift in the values that drive a new human resource management system to more effectively support organizational performance and mission accomplishment.

GPRA, Performance Measurement and Pay-for-Performance

The Government Performance and Results Act has opened the door to a new basis for managing performance that is consistent with corporate practice. Strategic planning and goal setting is now an established way to manage federal operations. There is a concomitant interest in another corporate concept, the Balanced Scorecard, which imposes a logical framework for measuring organization performance. OPM has been "selling" the effectiveness of the Scorecard concept as a sound approach for evaluating senior executive performance.

The combination of both represents the foundation of a performance planning and measurement process that is similar to that which would be found in many companies. Last fall OPM incorporated the basic logic of this approach in new regulations governing SES performance management. They also focused on executive performance management at a November 2000 conference that included several agency case studies of agencies employing this strategy.

The new regulations give agencies more flexibility to develop their own performance systems. That is seen as a key issue. The regulations also shift the emphasis to results, and institutionalize the balanced scorecard by requiring agencies to evaluate performance using measures that "balance organizational results with customer satisfaction, employee perspectives, and any other measures" an agency thinks is appropriate. OPM stressed that agencies should use performance appraisal results as the basis for pay, awards and other personnel decisions.

Below the SES level, an interagency work group on performance management issued a report in February 2000 that communicated a similar message to the President's Management Council. The group was composed of senior Human Resource executives from seven Departments, OPM, and NPR. It discussed three major themes central to effective performance management: 1 — Expect Excellence, 2 — Establish Accountability, and 3 — Take Timely Action. NPR issued a complementary report on performance management in 1999. OPM has developed an excellent website that makes available a wealth of information on performance management.

It is apparent that performance management has become a high priority in the past year or two. GPRA triggered a need to re-examine the way agencies develop annual operating plans. In doing so, the law also triggered a slow but in hindsight inevitable transformation to a performance culture.

It is widely understood that people perform at higher levels when they are working to accomplish goals and have a clear understanding of what's expected of them.

It is only now that federal agencies are working to develop the performance planning and management systems for lower organization levels. OPM's website describes the performance management system developed at the Kennedy Space Center which provides a linkage from each employee's performance plan, to their office, independent directorate/department, and ultimately the agency's goals and objectives. It may be that NASA and the Space Center have goals that are more readily defined but there are a growing number of success stories across government.

The standard argument is that performance goals and criteria should be objective or at least verifiable. It is rare that a meaningful goal cannot be defined in specific terms and broken down into tasks and time deadlines. That is important because it enables employees at all levels to understand how their efforts contribute to the achievement of the goal. Quantifiable measures do not exist for many job duties and even when they can be identified, they often look at only a portion of what's expected. And despite employee support for objective measures, when they are to be evaluated against an objective standard, they will be quick to point out the inequities that will result if there is no flexibility in evaluating their performance.

To reiterate from the interagency HR group report, employees need to understand what's expected of them, and how their performance will be evaluated. The more specific and objective the expectations, the easier it is for supervisors and their subordinates to discuss expectations and to agree on the performance level attained. In industry, it is common to define expectations with performance goals or targets. Companies have relied on management-by-objectives for over 30 years. The best practice would be to also define two additional levels of performance—a threshold or minimum acceptable level of performance and also the highest expected or outstanding performance level. That effectively defines the expected range of acceptable performance, and provides an explicit basis for assessing performance.

When performance expectations and the basis for assessing performance are specified adequately, it makes it relatively easy to rely on those criteria in evaluating employee performance. It also provides a defensible linkage to financial rewards. The evaluation can affect salary increases or it can also be used to determine performance incentives.

RATING PERFORMANCE

The best practice model from industry combines an assessment on the results achieved and on the selected competencies. In light of the GPRA requirements, results should be part of the equation. The emphasis in IT on

knowledge and skills also makes it important to involve some version of a competency assessment.

In the past OPM regulations led to the use of a five-point rating scale. However, when rating inflation pushed the average rating close to five, OPM backed off of the requirement and gave agencies the discretion to establish their own rating scales. The problems with inflated ratings led a few agencies to adopt two-level scales, essentially a pass-fail system. That, however, has proven to have it's own problems. It effectively means that everyone who reaches at least the threshold or minimum acceptable level of performance is rated as satisfactory. While this approach overcomes some of the problems with the five-level scales, it means that employees frequently get little, if any, useful feedback and it fails to provide a basis for recognizing and celebrating outstanding performance.

Organizations need to know which employees need to improve their performance. When poor performers are allowed to continue with little or no consequence, it affects employee morale. They know some action should be taken and if affects their confidence in management. A poor performer affects many people; the problem has been described as a cancer on the organization. The Performance Improvement Plan is an important first step but that depends on an effective performance management system.

More important, however, is management's need to identify the star performers. They are the employees the organization cannot afford to lose. They need to be recognized and rewarded as recognition of their value to the organization. It makes sense to develop a plan to fully utilize their talents. Companies have specific policies to manage high potential people.

That translates into a three-level rating scale. Research shows that employees know and generally agree on who is a star performer and whose performance is unsatisfactory. In the typical organization, the stars account for roughly 15 to 20 percent of a work group, and the poor performers no more than 2 to possibly 5 percent. The balance, roughly 80 percent of the work force, is performing at a satisfactory level, and contributing solidly to the organization's success. That breakdown seems to fit almost all work groups and is true in both the private and public sectors.

The three-level approach meets the organization's needs and also can be defended in light of the criticism of appraisal systems that was first voiced by Dr. W. Edwards Deming. No rating system is perfect. Deming, however, highlighted a serious problem with scales that have too many rating levels. With the classic five-level scale, for example, one supervisor might say an employee's performance is a "4" while another might say exactly the same performance is a "3". When that happens, the rating process is not valid. The three-level scale minimizes that problem.

Deming also made the point, although not in these words, that everyone thinks they are above average. Any rating process that tells people they are average or below average creates a reaction that is counterproductive. That makes it important to define specific expectations for a job and to evaluate people relative to those expectations. Then an employee can meet expectations, exceed expectations, or fail to meet expectations. That is a simple appraisal construct that serves the purposes of the organization as well as the employee. It serves little purpose to compare an employee with others in different jobs. With the three-level rating scale, the "meets expectations" performers should all be treated for reward purposes as equal. The rating system may generate a range of rating scores (e.g., 2.0 to 2.75) but the problems associated with defending personnel actions based on those fine distinctions dictate that people be treated the same. In traditional terms, they would be granted a step increase.

The people who "exceed expectations" would be granted their step increase but they might also be eligible, using the traditional terms, for a quality step increase. The reward might be a larger salary increase or it could also be a lump-sum bonus. People evaluated at this level might also earn a performance award.

The small group whose performance is unacceptable would trigger the normal federal personnel actions, which can include the denial of a salary increase. There should be very few people who fall into this category.

Although the discussion of financial rewards follows in the next section, it is important to note that pay for performance or any financial reward system works best when managers and supervisors have to live with and manage the rewards from a fixed budget. That imposes discipline and they have to make the hard decisions. Everyone is not a star despite the experience with PMRS. When there are no consequences to the supervisor, it is not surprising that s/he wants to make everyone feel good. Significantly, no one, including employees, views that as a credible process.

COMPETENCY-BASED PAY

Both total compensation models link pay increases and promotions to acquisition of new or higher level competencies. Developing and maintaining competencies are crucial to the IT profession and, therefore, are central to the proposed alternative HRM system.

Traditional merit pay policy looks at an individual's performance over the prior year, or at least that is how the policy is described in textbooks. Competency-based pay, in contrast, looks into the future. The assumption is that more competent employees can be expected to accomplish more, and are therefore more valuable. Thus, as employees develop new capabilities or improve existing skills, it is justification for paying higher salaries. The

different perspectives, past versus future, make competency-based pay a very different reward policy.

In the U.S. society, it is widely accepted that the most competent people should be paid the highest salaries. That is consistent with the view of the U.S. as a meritocracy. That may help to explain why the idea has generated such a high level of interest.

Competencies in this context are normally defined to include the knowledge, skills and learned behaviors required for job success. A common strategy for identifying and defining competencies is to ask the best performing job incumbents. For most jobs, a profile of perhaps 10 or so competencies captures the key capabilities that differentiate the best performers.

In IT, with the importance of getting up to speed on new technologies or systems, and on demonstrating "hot" skills, the logic of paying employees for what they can do is compelling. Competency-based pay could readily accommodate and expand the hot skill bonus concept.

This is consistent with OPM's focus on identifying and defining competencies in its new job profiles that are now replacing the qualification standards. They have identified over 90 competencies relevant to the broad range of jobs now covered under the draft qualification standard for IT occupations. Those are categorized as "general" (e.g., problem solving) or "technical"(e.g., electronic commerce, Web technology). The latter encompass the bodies of knowledge relevant to planning, developing and managing IT systems.

Competency-based pay is a relatively new concept that has emerged only in the past five years or so. It is not widely used but there is an extremely high level of interest in all sectors. That reflects the recognition that employee knowledge and the development of new or enhanced capabilities have become important in every organization. It also perhaps reflects the level of dissatisfaction or discomfort with the traditional merit pay increase policy.

Competencies are identified and defined for each job and level in a career ladder. The competencies effectively establish the capabilities that employees are expected to develop at each level. Employees are then assessed relative to the competency expectations, and that serves as the basis for determining the appropriate salary increase. "Fast track" employees who demonstrate rapid learning and skill development can expect the largest increases, while employees who stagnate and fail to develop new skills may be denied increases. Those employees who continue to grow and expand their capabilities are in line for promotions.

The competencies required for specialists in one career ladder may be completely different from those identified for other career ladders. Moreover, new competencies may be added at higher rungs in the ladder. For example, developing analytical skills might be important for entry level employees while strategic thinking skills become important at senior levels.

The best practice with competency-based systems is to specify the behaviors associated with each performance level in the appraisal system. With a three-level system, the behaviors define the "Meets Expectations" level, the "Exceeds Expectations" level, and the "Failed to Meet Expectations" Level. When the behaviors are spelled out, it helps to create a common understanding of the competency and the basis for evaluating performance.

For example, if "Giving Purpose and Direction" is an executive competency, a Failed to Meet behavior might be "Looks to others to provide direction." A Meets Expectations behavior for this competency might be "Sets clear short and long term objectives." An Exceeds Expectations behavior might be "Communicates a compelling view of the future that generates staff commitment."

In a competency-based pay system, the goal is to develop a framework of expected behaviors that clearly differentiate between levels of performance. The supervisor's assessment then determines the performance level and that in turn is the basis for granting a salary increase. That model is similar to many older performance appraisal and merit increase systems. The difference is that the competencies and behaviors are job-specific and defined in terms that are credible and understandable to both the manger and the subordinate.

In the corporate world, the emerging model for compensating employees relies on cash incentives as the reward for results and salary increases as the basis for recognizing individual growth and development. The latter is often in the form of a group incentive such as goal sharing. The payments send the message that both individual growth and results are important to the organization.

The alternative, when incentive plans are not appropriate, would be to base salary increases on a combined evaluation of results and enhanced competence. This strategy is reflected in a matrix that serves as the basis for deciding salary increases, where results are on one side of the matrix and assessed competence on the other side. The cells of the matrix then show the percent increase permitted for each combination of the two measures. Those employees generating the best results and individual development can expect the largest increases.

The competency concept is applicable for all jobs, from senior executives to FWS jobs. The SES ECQs and leadership competencies could be used as the basis for salary increase decisions for IT executives in the same way that a

competency such as problem solving might be used with lower level IT specialists. An assessment of an employee on the profile of competencies relevant to his or her job can also be used as the basis for promotions, career management, coaching, and for preparing individual development plans. The database of competencies represented in the work force can also be used for human capital planning and for evaluating staffing requirements.

Cash Incentives

Easily the most significant difference between the compensation programs common to the private and public sectors is the importance of cash incentives in the corporate world. Executive and management incentive plans are virtually universal in public companies and one of he important trends is the expansion of incentive plan participation to lower job levels. This is consistent with the commitment to a pay-for-performance philosophy.

To be sure, federal executives are eligible for bonus awards. Performance awards are also made to employees below the executive level. But those payments are best categorized as bonus awards with the distinction that the payments are made selectively and typically without rigorous criteria. Recipients do not know that they will receive an award until selections are announced.

With corporate incentive plans, there is little subjectivity, awards are determined systematically with a formula-approach. Corporate incentives at all levels are primarily team or group awards. Individual performance may affect the actual payments but commonly the pool of money limiting all awards is dependent on company, group and/or team performance results. It would be unusual for an employee to be denied an award if they are made to his or her co-workers. The implicit message is that everyone benefits when the company or group performs well.

There is a solidly entrenched and widely shared belief among corporate leaders that pay-for-performance can be a powerful incentive to improve performance (or otherwise influence behavior). The era of TQM and reengineering highlighted the importance of first-line workers and that in turn triggered an interest in extending incentives to people below the management ranks. There are now a growing number of companies where every employee participates in some form of incentive plan.

It is important to appreciate that the earliest incentives were based on a profit sharing concept, and that was the common model until a decade or so ago. According to a widely espoused argument, since public employers obviously are not profit oriented, incentives cannot and should not play a similar role in government. At one time, there was also a related argument that had supporters in both the private and public sectors. To paraphrase the point in that argument, “We're already paying them a good wage. We shouldn't have to pay them cash incentives?”

Now, however, those arguments are rarely heard at least in the corporate world. The prevailing model in the private sector is best seen as an equation — on one side are the planned or desired performance results, on the other side are the planned payouts. As performance improves, there is a direct and explicit, almost formula-driven linkage to the cash payouts. Those payouts continue to be tied at least in part to company success but there are separate measures or criteria to determine a portion of each individual's award based on how well their group or team performs.

A widely used concept in planning cash incentives is the "guideline" or "target" award. A guideline award is expressed as percentage of salary and is the amount a plan participant can expect for achieving the performance goals. If performance exceeds the goals, participants can generally expect more than the guideline amount. When they fail to reach the goal(s), the awards are below the guideline amounts.

For executives, guideline percentages are typically in the range of 50 percent for the CEO to 25 percent for lower level executives. The percentages progressively diminish for lower level plan participants to perhaps 5 percent for non-exempts and entry-level professionals. Actual incentive payments would then depend on performance and be above or below these percentages.

The guideline concept facilitates communication, serves as the basis for budgeting, and enables plan participants to estimate their payouts throughout the performance period. They know what the can expect at all times.

As a point of clarification, those percentages do not include other income, primarily from stock options. The option-related income tends to be the large amounts that are often the focus of the media. The income from option shares is sometimes combined in newspaper and magazine articles with incentive payouts, which masks and tends to exaggerate the amounts paid as incentives.

At the executive level, the most common criteria are performance goals for the corporation or business unit, an executive's function, or personal goals. In keeping with the accepted practice for goal setting, it would be unusual to see more than five or six performance goals. The CEO may retain the authority to increase or decrease individual awards, based on his assessment of the individual's contribution, but for the most part the awards are calculated according to a formula.

Below the executive level, industry has recently adopted a mushrooming number of group incentive plans. These plans are referred to with several names — gain sharing, goal sharing, and results sharing, are among the widely used phrases. A true gain-sharing plan is similar to a profit sharing plan, with payouts linked to savings in labor costs. The gain sharing concept was developed by a union leader in the 1930s so it has been

around a long time. Now, however, the phrase is often used loosely to refer to any group incentive.

One of the most important plan design considerations, particularly for non-management participants, is the "line-of-sight" argument. In this context, line-of-sight refers to the perceived ability of a worker to control or influence the performance measures. That, it is argued, is a key to a successful incentive plan. It explains why profit sharing plans are seldom effective — employees simply cannot control profitability. When employees are in a position to control or influence, the prospect of monetary rewards can provide an incentive to perform at high levels.

Cash incentives have a variety of uses in the private sector. In the IT industry, cash payments are used widely in recruitment—"signing bonuses"—in the same way they are used in sports. Bonus payments are also used as an incentive for retention. Another application is the completion of important courses or for the demonstration of new skills.

The latter is of course related to the use of salary increases in competency-based pay systems. While incentives are often dealt with separately from salary management, both are components of a total compensation program and need to be managed within an integrated framework.

A final distinction between the private and public sectors is the universal corporate practice of budgeting for all payments to employees. Incentives are a business expense and treated as a line item in the budget. That is a very different philosophy than that which prevails in government, where employee bonuses are frequently paid only if money is "left over."

APPENDIX O:
FINANCE/PAYROLL/HRIS IMPACT

As part of the IT pay study, the Academy's project team examined the potential impact of a new pay system on existing financial, payroll, and/or human resources information systems (HRIS).

The team distributed a questionnaire listing possible pay system changes and asked respondents to assess the degree of difficulty in implementation, potential cost impacts, and lead time needed on specified components of their financial, payroll, and HRISs. These components included requirements, software, hardware, telecommunications, system documentation, policies and procedures, training materials, and user guides.

The questionnaire was distributed electronically to financial, payroll, and HRIS professionals in the following organizations:

- Human Resources Technology Council and member agencies
- Office of Personnel Management (specifically, the Office of Workforce Information and the Human Resources Data Network Project staff)
- Office of Management and Budget
- Key functional organizations (e.g., CIO Council, Joint Financial Management Improvement Program)
- Major payroll processors (e.g., DoD, USDA/NFC, VA, GSA, and Interior)
- Primary HRIS vendors

A sufficient number of responses were received to provide a representative sample of the government-wide impact of a potential new pay system.

Table 1 summarizes the sources of responses received.

TABLE I
RESPONDENTS

Agency/Organization	FUNCTION			
	Finance	Payroll	HRIS	Consolidated
AOUSC		1	1	
USDA (NFC)	1	4	1	
DoD (DFAS)		1		
FAA				1
GSA		1		
Interior (NBC)				1
JPMIP				1
Justice				1
OPM (HRLOB)			1	
State				1
Treasury				1
Veterans Affairs	1		1	
Vendors: PeopleSoft				1
Total 20	2	7	4	7

FINDINGS

The team identified the following trends among responses:

- In general, the possible pay system changes would have a lower impact on agency financial systems than on payroll or HRISs.
- Legacy payroll and HRISs (e.g., DoD/DFAS, VA, USDA/NFC) will be more difficult to change.
- More modern payroll and HRISs (e.g., AOUSC, Interior, GSA) systems would be relatively easy to change.
- Most respondents emphasized that policy and procedural requirements must be defined clearly up front. If not, costs will escalate and delays will occur.
- The payroll/HRIS interface is a potential problem area, especially in those agencies where the two systems are not currently integrated.
- Of the seven components rated for each system, the majority of respondents rated the degree of difficulty in implementation as follows:
  - High – requirements and software
  - Medium – system documentation, policies and procedures, training materials, and user guides
  - Low/None– hardware and telecommunications

Table 2 summarizes projected cost implications, by organization.

TABLE 2
COST IMPLICATIONS

Agency	Cost Implications
ACUSC	No significant impact (new system); some cost (legacy system)
USDA (NFC)	None-HRIS; some payroll costs
DoD (DFAS)	Already accommodates numerous demonstration pay plans (but some costs identified)
EPA	None
GSA	None
Interior (NBC)	No significant impact.
Justice	No significant impact.
OPM (HRDW)	Multiple adjustments
State	Some cost; no pay plan different from GS, broadbanding, special allowances, and adjustments to pay schedule more than once per year; In addition, will impact State Department's separate Foreign HR system allowances
Veterans Affairs	Some cost; no pay plan different from GS and broadbanding
Peoplesoft	No significant impact.

Table 3 summarizes, by organization, minimum lead time needs required to implement the software, hardware, or other modifications resulting from these types of pay changes, based on past experiences with similar changes and assuming normal resources are available.

TABLE 3
LEAD TIME

Agency	Minimum Lead Time
ACUSC	4-6 months (new system); 6-12 months (legacy system)
USDA (NFC)	6-12 months
DoD (DFAS)	11 months
EPA	3-5 months
GSA	not provided
Interior (NBC)	4 months
Justice	limited (no specific range provided)
OPM (HRDW)	12-18 months
State	6 months
Treasury	6 months
Veterans Affairs	6-12 months
Peoplesoft	6-12 months

CONCLUSIONS

- Overall, the degree of implementation difficulty is expected to be moderate. Respondents stated that the types of changes proposed are no more difficult or unusual than the frequent and numerous changes made to pay and benefits systems for a variety of purposes, such as for demonstration projects or special categories of employees such as law enforcement officers or firefighters.

- The consensus among respondents involved in operating and maintaining financial, payroll, and HRISs is that there are no significant government wide implementation-cost implications. (Both of the above conclusions are predicated on the assumption that requirements and procedures are clearly defined at the outset.)

- Lead-time needed to implement changes would likely be in the 4–12 month range, depending on the agency. Respondents stated that these estimates assume requirements are defined and implementation funds are available.

In summary, the implementation of a new pay system for IT professionals will carry some cost, and will require some lead time. However, this impact should not be a significant obstacle to the establishment of such a system.

APPENDIX P:
FEDERAL DEMONSTRATION PROJECTS

INTRODUCTION

A major provision of the Civil Service Reform Act of 1978 was to permit federal agencies to conduct personnel management demonstration projects under waivers of personnel laws and regulations. Seven demonstration projects have been implemented since 1980 in order to test more flexible alternatives to current personnel management programs and systems including job classification, performance management, recruitment methodology, and employee compensation practices.

Federal agencies obtain demonstration project authority from the Office of Personnel Management (OPM). Under prescribed conditions, OPM allows requesting organizations to waive existing federal human resources management law and regulations in Title 5, United States Code, and Title 5, Code of Federal Regulations. This waiver permits proposal, development, testing and evaluation of interventions for human resources management with an eye toward improving the capacity and value-added contribution of human resource management programs and systems in the federal sector.

Examples of laws and regulations that may be waived under Title 5 include:

- qualification requirements, recruitment, and appointment to positions;
- classification and compensation;
- assignment, reassignment, or promotions;
- disciplinary actions;
- providing incentives;
- establishing hours of work;
- involving employees and labor organizations in personnel decisions; and
- reducing overall agency staff and grade levels.

Legal requirements for the scope of demonstration projects are that:

- the length of the project be no more than 5 years (with some extension permitted);
- there be no more than 5,000 employees per project;
- OPM oversee no more than 10 active demonstration projects at one time;
- there be consultation and negotiation with affected employees and unions;

- the agency submit a formal project plan;
- Congress and employees be notified; and
- an evaluation be done.

Many of the demonstration projects have used interventions that are directly related to suggested approaches contained in this report for improving the federal government's capacity to recruit, retain and compensate its IT workforce. Relevant information about the results these projects, specifically those conducted at the National Institute of Science and Technology, Department of the Navy (NWC and NOSC — "China Lake"), Department of Commerce and the Naval Research Laboratory, is highlighted in succeeding pages of this appendix.

I. National Institue of Science and Technology (NIST)[1]

About the Demonstration Project

The demonstration project was implemented January 1, 1988, at both NIST locations in Gaithersburg, Maryland, and Boulder, Colorado, and covered 3,050 employees representing the four major occupational groups: scientists and engineers, administrative staff, technicians and support staff. The project was originally scheduled to expire at the end of its 5-year statutory period. OPM granted an extension until September 15 1995 to evaluate the effects made to the performance evaluation program in 1990. A second extension to September 30, 1998 was granted to test changes to the salary payout formula, in an effort to slow salary growth and project costs. The project was made permanent March 7, 1996, by Public Law 104-113.

The NIST Demonstration Project implement seven major personnel system changes or interventions:

1. Consolidation of the 15-grade GS into 5 broad bands in each of 4 career paths;
2. Simplified, automated job classification based on broad bands and grouping of similar occupations into career paths; classification authority delegated to managers;
3. Pay for performance for all exempt and non-exempt employees;
4. Agency-based hiring and expanded use of direct hire authority;
5. Recruitment bonuses, travel and relocation allowances, and retention allowances;
6. Extended probationary period for scientists and engineers from 1 to a maximum of 3 years; and
7. Total compensation comparability.

OPM analyzed NIST's pay banding program in comparison with similar progression under the GS system. All salary differences were adjusted for pre-existing baseline differences and thus represented the difference that could be attributed to the demonstration project. The consolidation of grades into broad bands provides NIST employees with increased pay potential, but progression through the bands is contingent on performance.

After eight years, mean salaries at NIST were 10 percent higher than for the GS comparison group. Salaries of administrative employees rose the most and after eight years, the salary difference between NIST and the comparison group increased to 21 percent over the baseline difference. There are two reasons for this difference. At baseline, salaries were five percent lower due to a more junior population. The second reason is that the banding of grades 13 and 14 combines what was the full performance level for many of these employees (GS-13) with a senior expert/supervisory level. Between 1988 and 1995, most employees migrated into the upper (GS-14) part of the band.

The NIST pay pool is currently 2.45 percent of payroll, down from 2.9 percent in the first three years and a separate cash bonus pool of 1.5 percent. Government annual pay adjustments are also contingent on performance and added to the pay pool. Individual merit increases range from zero to 20 percent plus comparability depending on an employee's band or position within a band. NIST also has supervisory differentials adding 3 percent for team leaders and 6 percent for managers who occupy the same bands as non-supervisors. At NIST, salaries were 4.4 percent higher after five years (but this was later lowered via an adjustment to pay pools affecting payouts for administrative employees).

In 1991, NIST adjusted its base pay formula to slow salary growth. The data show that overall salary growth declined until 1994, when it rose again. At that time, salary growth was continuing at a faster rate than under the GS system.

SIMPLIFIED CLASSIFICATION SYSTEM

The project introduced a simplified and automated classification system, with classification authority delegated to line managers.

Employee Impact

Average salaries increased under banding and after five years were four percent higher than for the comparison group that remained under the old system. However, satisfaction with the new performance management system increased, and according to the 1993 attitude survey, 67 percent of employees were in favor of the project. The original five-level rating system was changed in 1990 to a two-level system that was linked to ranking for pay purposes using a 100-point scale. Rating distributions remained consistent across time. In contrast, ratings for the comparison group under the old system showed a steady rise during the same period.

Employee Perceptions of Pay Equity

Compensation systems are generally designed to provide for both internal and external pay equity in order to attract and retain employees. While it is generally acknowledge that the GS system comes close to the goal of internal equity, in 1995, NIST employees

perceived greater internal equity than the GS comparison group (53 percent versus 42 percent).

While external equity perceptions among employees were equally negative for the demonstration and GS comparison group at the beginning of the NIST demonstration project, in 1995 48 percent of NIST employees reported that they were underpaid (versus 55 percent of other Department of Commerce employees).

In general, pay satisfaction is high at NIST than at comparison sites. 56 percent of NIST employees, compared with 42 percent of comparison group employees, were satisfied with their pay in 1995.

NIST developed two different approaches for controlling salary costs - a top down and a bottom up approach. The bottom-up approach established a budget pool by examining every personnel action ion the base year (year prior to the demonstration project being implemented) that involved performance-based increases, cost-of-living adjustments, cash awards, and any others that had a salary cost associated with them. NIST calculated the total annual pay pool by adding up all of the salary costs of these personnel actions in the base year and this became their controlling number.

While NIST concluded they had maintained budget neutrality, OPM found that their increases exceeded those of the other labs and that they were spending more money in the administrative career path. This was as a result of most employees in the administrative career path being in a single operating unit that received salary funds out of overhead (vs. scientists and engineers who were paid from direct labor funds). To deal with this, NIST revised its base pay funding formula and reduced the Administration funding allocation to bring salaries in these occupations in line with its other career paths. It is also important to note that despite the higher rate of salary growth at NIST (relative to the GS comparison group), NIST has remained "budget neutral" at the organizational level.

Program Impact

Supervisors continue to find the system easy to use; they feel that they devote less time to position classification and that they have more authority to influence classification decisions.

Perceived Classification Authority

Managers have delegated classification authority to allocate positions to career paths and pay bands. The demonstration project assigned levels of classification authority to supervisors. Upper level managers have approval authority and line managers have classification or recommending authority, depending on the career path, and pay band of a position. Significantly more NIST managers (60

percent) than GS managers (34 percent) reported adequate classification authority in 1995.

Improved Management-Personnel Staff Relations
Delegated classification authority and simplification of the classification system reduced conflict over classification between management and personnel and allowed personnel to take a more advisory role. Approval of position descriptions became a less adversarial process. (Only nine percent of NIST supervisors found the process adversarial, compared to 30 percent of GS supervisors based on a 1995 survey. Similarly, NIST supervisors were significantly more satisfied with the classification system than were GS supervisors: 69 percent versus 38 percent.)

Time spent on the Classification Process
In 1995, very few NIST managers (9 percent) agreed that they devote too much time to position classification, compared to 25 percent of GS managers. Similarly, only 13 percent of NIST managers, but 48 percent of GS managers, indicated that classification decisions take too long.

Ease of use of the Classification System
NIST's automated classification system produces two-page position descriptions using factor groupings: (1) duties and responsibilities and (2) knowledge, skills and abilities. While there was an unexpected decrease in the number of supervisors who agree the automated system is easy to use (from 80 percent in 1991 to 55 percent in 1995, supervisors were still significantly more satisfied with the program than were GS supervisors of the traditional classification system (69 percent versus 38 percent in 1995).

Supervisory Authority Over Pay
During the demonstration, NIST supervisors reported dramatically increased authority over pay determination compared to their GS counterparts (54 percent versus 12 percent in 1995). Authority to promote people, unrelated to broad banding, was also seen as greater by NIST supervisors (59 percent versus 34 percent).

PERFORMANCE-BASED PAY

The NIST pay-for-performance system was initially modeled after the government-wide Performance Management and Recognition System (PMRS) but was changed after three years to a two-level system linked to numerical ratings for pay purposes. The system has two components including the performance rating and the method for translating numerical scores into salary increases and bonuses.

Employee Impact

Under the NIST program, merit increases are distributed from pay pools. Pay pools consist of groups of employees in the same career paths within an operating unit.

Pay Pools

Each pool had a pay manager who made final decisions about awarding merit increases. Supervisors submitted their subordinates' scores and recommended merit increases and the pay pool manager uses this information to rank everyone in the pay pool. This ranking then formed the basis for determining the amount employees receive for their annual merit increases.

Bonuses

Additionally, performance bonuses are granted for special contributions, reinforcing and motivating employees who make the extra discretionary effort which otherwise might not be recognized in the normal performance planning and evaluation process. The awarding of bonus payments increased between 1988 and 1995 both at NIST and in the GS comparison group, but the NIST increase was greater (56 to 94 percent versus 68 to 70 percent, respectively). Overall, NIST employees were more likely to receive bonuses than those in the comparison group. Top rated support staff were even more likely to receive a bonus.

Program Impact

At NIST, the manager's role in personnel management has been strengthened through the delegation of personnel authorities without negatively impacting job satisfaction.

Lower Turnover

Turnover was lower following the implementation of the project which can to a degree be attributed to higher rates of satisfaction among employees. However, there were also important economic factors at that time which influenced this condition.

Enhanced Ability to Recruit and Retain

Recruitment interventions have helped NIST to hire and maintain a workforce that continues to be high in quality. Data show that NIST has become more competitive with the private sector and that employees were less likely to leave for reasons of pay.

Summary of Results of the Demonstration Project

- Recruitment bonuses have been used sparingly but successfully to attract candidates that might not have accepted federal jobs otherwise. Data show that NIST has become more competitive with the private sector and that employees are less like to leave for reasons of pay.

- The manager's role in personnel management has been strengthened through the delegation of personnel authorities without negatively impacting job satisfactions which has remained higher after implementation of the demonstration project.

- NIST has implemented a more flexible and less cumbersome personnel system. Nevertheless, the broad-banding system has led to higher salary costs. Salary costs could be reduced by making changes to the banding structure, especially for administrative staff, and by reducing funding for merit pay increases and using mixed bonus and base pay increases.

- NIST has succeeded in implementing successful pay for performance system. Some improvements in the performance feedback and rating process are recommended.

- More than two-thirds of NIST employees support the demonstration project, which compares favorably with the Navy Demonstration Project.

II. Navy Demonstration Project[ii]

About the Demonstration Project

The Department of the Navy (DON) Demonstration Project was implemented in July 1980 at two DON research and development laboratories, the Naval Weapons Center (NWC), China Lake, California, and the Naval Ocean Systems Center (NOSC), San Diego, California. Implementation was phased in by occupational group, with nearly all workers brought into the project by the end of 1982. In November 1987, the last remaining group of white-collar workers, clerical employees at NWC, entered the project. As of January 1990, there were 5384 covered employees at NWC and 3291 at NOSC.

Throughout the course of the project, data had been gathered for comparison purposed from two other research and develop facilities in DON: the Naval Surface Warfare Center (NSWC) located in Dahlgren, Viriginia and White Oak, Maryland, and the Naval Air Development Center (NADC) in Warminster, Pennsylvania. The demonstration-equivalent population at these labs is 2669 for NADC and 4920 for NSWC.

Four relevant personnel system changes or interventions were implemented at NOSC and NWC under the demonstration project: pay banding with flexible starting salaries, recruitment bonuses, pay for performance, and objectives-based performance appraisal.

Simplified Classification Program

The project tested a simpler and more flexible classification system feature career paths and broad pay bands in which line managers have more responsibility for classification. Each career path is divided into broad pay band instead of the traditional GS grades and each band incorporates at least two GS grades. Starting salaries could be set anywhere within the bank in which the position to be filled is classified.

Recruitment Bonuses

In 1987, OPM approved addition of recruitment bonuses to give demonstration labs another incentive to offer candidates. Bonuses were paid out either in lump sums or in installments over a period of up to three years and are limited to a maximum of 15 percent of a new hire's starting salary.

Pay for Performance

Annual increases to base pay are determined according to payout formulae which link the increases to summary performance ratings. Payouts are made from pay pools established at each lab on the basis of historical spending for within-grade increases, sustained superior performance awards, and

promotions between grades that were merged into a single pay band. A smaller performance bonus pool was also created to fund lump-sum bonuses.

OBJECTIVES BASED APPRAISAL

The appraisal system is based on the principles of management by objectives which is based on an annual appraisal cycle with three phases:

1. Development of performance objectives, which can be modified during the year;

2. Interim reviews of performance after six months; and

3. A year-end appraisal culminating in a summary rating at one of five levels of performance.

Employee Impact

Average salaries have increased two to three percent under banding. However, recruitment, retention and reduced turnover of high performers and increased turnover of low performers have all improved.

Additional Salary Costs

According to demonstration evaluation reports, additional salary costs which have resulted at the various demonstrations did not appear to be inevitable consequences of the projects. They simply represented a dollar investment the demonstrations chose to make one that other organizations may or may not wish to duplicate. The demonstrations could have controlled salary costs in a number of ways by:

- limiting the pay pool from which salary increases are paid, perhaps by excluding funds previously distributed as incentive awards;

- eliminating the special salary rates for certain groups of employees; or

- omitting the buyout feature implemented at the time employees were brought under the demonstration system.

Had any of these strategies been used project results might well have been less favorable in terms of recruitment and retention. This, in turn, may have manifested itself in increased program development costs associated with acquiring and training new talent.

Program Impact

The demonstration projects focused on improving recruitment and retention of high quality workers and "letting managers manage" by increasing their control over classification, pay, and other personnel matters. Classification was simplified and delegated to managers. Pay increases within broad pay bands were linked closely to performance ratings. Starting salaries were made more flexible.

Reduced Time and Less Conflict in Classification Decisions

Simplified delegated job classification based on generic standards reduced the time for classification actions and reduced conflict between personnel and managers. Perceived supervisory authority over classification, pay and hiring increased, as did employee satisfaction with pay and performance management; more than 70 percent of employees are supporting the demonstration system. In addition, the following benefits were achieved (China Lake)iii:

- Administrative cost savings of 0.8 percent of payroll from reduced paperwork and less time spent on classification due to broad banding.
- Reduced turnover of high performers: turnover among high performers was reduced by 50 percent. Between 1984 and 1992, turnover of top-rated scientists (two highest ratings on a 5-point scale) averaged 3.5 percent at the demonstration labs, compared to 5.5 percent at comparison sites which used traditional grades and longevity-based pay progression.
- Increased turnover of low performers: over a 10-year, period, turnover of marginal and unacceptable performers ranged from 20 to 50 percent. Those who were not separated improved their performance.
- Pay satisfaction was significant higher under broad banding and pay for performance; 55 percent of China Lake employees reported being satisfied with their pay, compared to 45 percent of employees in other DoD labs.
- Demo managers reported increased authority of HR functions, especially classification and pay.
- Improved organizational performance: broad banding and pay for performance have helped the two original Navy labs become a model for other DoD research labs and given them a competitive edge.

SUMMARY OF RESULTS OF THE DEMONSTRATION PROJECT

- Navy achieved its main objective: increased retention of high performers. Turnover among high performers at the demonstration labs has been consistently lower (3.5 percent) than at the comparison sites (5.5 percent) that had no organization-wide pay for performance system.

- Performance rating distributions in the Navy demonstrations were found more rigorous than in the rest of government. In most years, about 50 percent of employees were rated average, and no more than 10 to 12 percent were rated outstanding. Under the federal merit pay system, the percentage of those rated above average rose to 82 percent in 1991.

- Using historical spending levels as a basis, the Navy labs came up with annual funding levels of 2.3 to 2.4 percent of payroll to fund their pay for performance system. An addition .8 to 1 percent was reserved for cash bonuses. The annual comparability increase was also added to the merit pay pool and made contingent on performance. The labs used a 5-level rating system linked to a system of annual pay increases ranging from 0 to about 6.0 percent, plus comparability (provided performance was at least at the satisfactory level). During the 1980s, a high performer was able to earn merit increases of up to 10 percent. In contrast, the federal merit pay system provided for a maximum merit increase of 7.0 percent (including comparability). The Navy demonstration labs showed the lowest cost for their pay for performance system, with average salaries about 2.0 percent higher after 10 years than their control sites under the GS system.

III. Department of Commerce[iv]

About the Demonstration Project

The Department of Commerce Personnel Management Demonstration Project was implemented on March 29, 1998 and is scheduled to last five years (March 2003). It was designed to apply several of the human resource interventions from an early demonstration project within DOC to a wider range of occupational areas within organizations with different missions. The first demonstration project involved employees at NIST (and is discussed earlier in this appendix). The NIST project was considered to be highly successful by OPM. This project seeks to build on the NIST venture and determine whether interventions in that project can be successfully implemented in other DOC organizations. Project elements included simplifying the current position classification system; establishing a performance management and rewards system that will improve individual and organizational performance; and improving recruiting and examining to attract highly qualified candidates and get new hires aboard faster. The demonstration project pay-for-performance system was designed to better reward both individual and overall organizational performance. It encourages better teamwork by providing greater incentives for each team member to achieve a higher level of individual accomplishment while contributing to the success of the team (extracted from OPM Website, Demonstration Projects, Department of Commerce).

Employee Impact

Higher Pay Increases

Performance-based pay increases were higher for those who remained in the organization compared with those who left; turnover was lower among supervisors receiving supervisory performance pay, and Demonstration Group participants received higher pay increases than their counterparts in the Comparison Group.

Employees' salaries did not change upon conversion to the demonstration project. Those moved to positions outside the demonstration project were adjusted to the proper grade level and step. All demonstration project employees with an Eligible rating continued to receive the annual GS pay increase and locality pay increases. The minimum and maximum rates of each pay band were adjusted to reflect these increases. Funds previously used for promotions which would have occurred within pay bands, within-grade increases, and quality step increases were used to fund incentive pay pools. Funds previously used for cash awards such as special act or service awards were used to fund bonus pools. Funds for these separate pools could not be spent for any other purposes.

Supervisors in all career paths were eligible for supervisory performance pay, which had the potential for increasing their salaries by up to six percent higher than the maximum rate of their pay bands.

Higher Ratings Translate to Higher Pay

According to Booze-Allen and Hamilton (BAH), during the first year of project implementation the NFC's Payroll/Personnel System indicates that high-rated employees received higher pay raises and bonuses under the new system. This positive relationship indicates that as performance increases, so does salary received. These results provide evidence that the pay band structure provides the flexibility to reward high performers with financial gains. Objective data show that Demonstration Group employees received salary increases ranging from 0.0 to 12.2 percent based on performance. The average increase was 2.73 percent. Almost two-thirds received increases of less than 3.0 percent, and almost 12 percent did not receive a salary increase. The percent salary increases given to employees spanned a wide range (0-12 percent). The fact that almost 8.0 percent of Demonstration Group employees received salary increases of 6.0 percent or above (linked to the prior finding that percent increases were directly related to performance scores) indicates that DOC managers are making use of the higher percentages available to reward higher performing employees.

Greater Pay Flexibility Perceived as Competitive Edge

Employees believe that pay bands provide a tool whereby DOC can be more competitive with other agencies within the federal government as well as public sector companies. By increasing a hiring official's flexibility in establishing a new employee's base pay, DOC can attract candidates that would have otherwise taken a position elsewhere.

BAH reported that supervisors in the Demonstration Group agreed more frequently that their pay system is more flexible than did Comparison Group participants. Additionally, information from interviews with pay pool managers indicates a new flexibility previously unavailable to them. Pay pool managers stated that the new pay bands are easy to use and understand. They perceive that the flexibility they provide helps their organization to establish competitive starting salaries. Pay pool managers state that this system has already made a difference to their organizations. The ability to start a highly qualified candidate at a higher rate than he/she would have under the old system increases the likelihood of hiring a sought-after candidate.

Program Impact

Initially More Work for Supervisors

The demonstration increased delegated authorities, simplified and streamlined classification and provided greater flexibilities in decision making. Some functions, such as position classification and staffing, consequently required less time, whereas performance management required more. BAH found that the workload of supervisors and managers increased substantially with the implementation of the project. Managers and supervisors stated that while they wanted the flexibility provided by the project, they were surprised at the amount of work that it took to initially implement them and manage the project during the first year. Non-supervisory focus group participants said that the performance appraisal system would have worked better if supervisors had not been so overworked, doing appraisals and doing their own technical work. This is in spite of the fact that supervisors were given an incentive (via supervisory performance pay) to find creative ways to balance the amount of time spent on their technical vs. supervisory tasks.

More Autonomy for Work Units

BAH focus groups revealed that supervisors from the Demonstration Group did not feel that the new automated classification system was a drastic change from the old system. However, supervisors did indicate that the new system offered them more control over the classification process. Supervisors agreed that this was an important step in providing more autonomy for their work unit.

Less Need for Interaction with HR Office

BAH employee focus groups also noted that DoC employees believe the new automated classification system does not improve upon the classification decisions but instead improves the process of classification. By allowing managers to perform this role, managers can reduce the required interaction with the Human Resources Offices.

IV. NAVAL RESEARCH LABORATORY (NRL)

ABOUT THE DEMONSTRATION PROJECT

NRL's Personnel Demonstration Project included a broad band classification/pay system similar to the proposed market driven reform model. The project reallocated positions to one of four career tracks and each track consists of three to five career levels or broad bands. Most career levels in the new system contain two or more general schedule grade levels.

Employee Impact

The broad band feature of NRL's Personnel Demonstration Project had the potential of escalating costs if employees were moved unchecked through their pay bands or career levels. This is because most career levels combine two or more GS grade levels allow pay to exceed the highest step of an employee's full performance grade level without the employee receiving a promotion.

To control costs (maintain cost neutrality), NRL benchmarked several organizations which developed successful mitigation strategies. Two similar research and development laboratories, Lawrence Livermore and Sandia, which both have broad banding systems, use a top down approach. Overall salary increase guidelines are provided from the top and implementation, in terms of decisions on individual increases, is at the working level. To maintain cost neutrality, all increases must be within the total increase budget which is stated in terms of a percentage of the current salary budget.

- At Livermore, three lab-wide salary committees allocate a fixed amount of money to three directorates (scientists and engineers: technicians; and administrative personnel) for salary increases. Ranking for increases is based on three criteria: knowledge skills and abilities; importance of the job to the overall program; and performance. Salary increases are then granted based on an employee's relative ranking.

- Sandia's process is slightly different with respect to the structure of its salary committees and it also expands on criteria used to rank employee contributions. As part of the performance management process, managers rate "Value of Contribution" for all employees which includes performance, job knowledge, task management, customer, supplier relations, team work, communications effectiveness, scope of responsibility and complexity of work.

Program Impact

The implementation of pay banding has afforded NRL the opportunity to restructure its research and development organizations to take

advantage of new HRM flexibilities. Such restructuring has the potential advantage of freeing scientists and engineers to concentrate on research and development work and to generate administrative overhead savings in terms of work processes. This assumes that there will be additional professional work available for these employees in lieu of administrative tasks. The professional work would generate more revenue by increasing the productivity and amount of direct work performed by scientists and engineers.

Conclusions About the Demonstration Projects[VI]

The federal demonstration projects have moved toward a decentralized, professionalized service that gives managers more control over hiring, firing, and paying employees. The evaluation results show that increasing managerial authority did not negatively affect employees. However, managers need to be well trained to ensure that these programs are administered in a fair and equitable manner, and they have to be held accountable for the results.

Organizational change experts have documented that for mature organizations, the cycle time for creating fundamental, cultural change is twice that needed for introducing a new technology. For the federal personnel system, the demonstration projects can be considered new technology. Given that it has taken fourteen years to implement the first successful demonstration project on a permanent basis, it may take another fourteen years for the federal personnel system to succeed in renewing itself.

The demonstration projects have taught the federal sector that commitment to change can overcome the absence of preexisting ideal conditions. Both Navy and NIST gradually moved toward a performance culture over time. The data from their demonstrations show that resistance to change can be overcome if there is a strong, long-term commitment to making the change successful.

[i] Summative Evaluation Report on NIST Demonstration Project 1988-1995, Office of Personnel Management, June 27, 1997

[ii] Management Report XIV for the Navy Personnel Demonstration Project, USOPM, August 1991

[iii] OPM Status Report on DOD S&T Reinvention Laboratory Demonstration Program, June 1998

[iv] Department Of Commerce Personnel Management Demonstration Project Evaluation Implementation Report, Washington, DC, June 5, 2000, Booz-Allen and Hamilton

[v] Naval Research Laboratory: Position Management Analysis, A Report from a Panel of the National Academy of Public Administration, March 1999

[vi] Paying for Performance: Lessons Learned in Fifteen Years of Federal Demonstration Projects, Brigitte W. Schay